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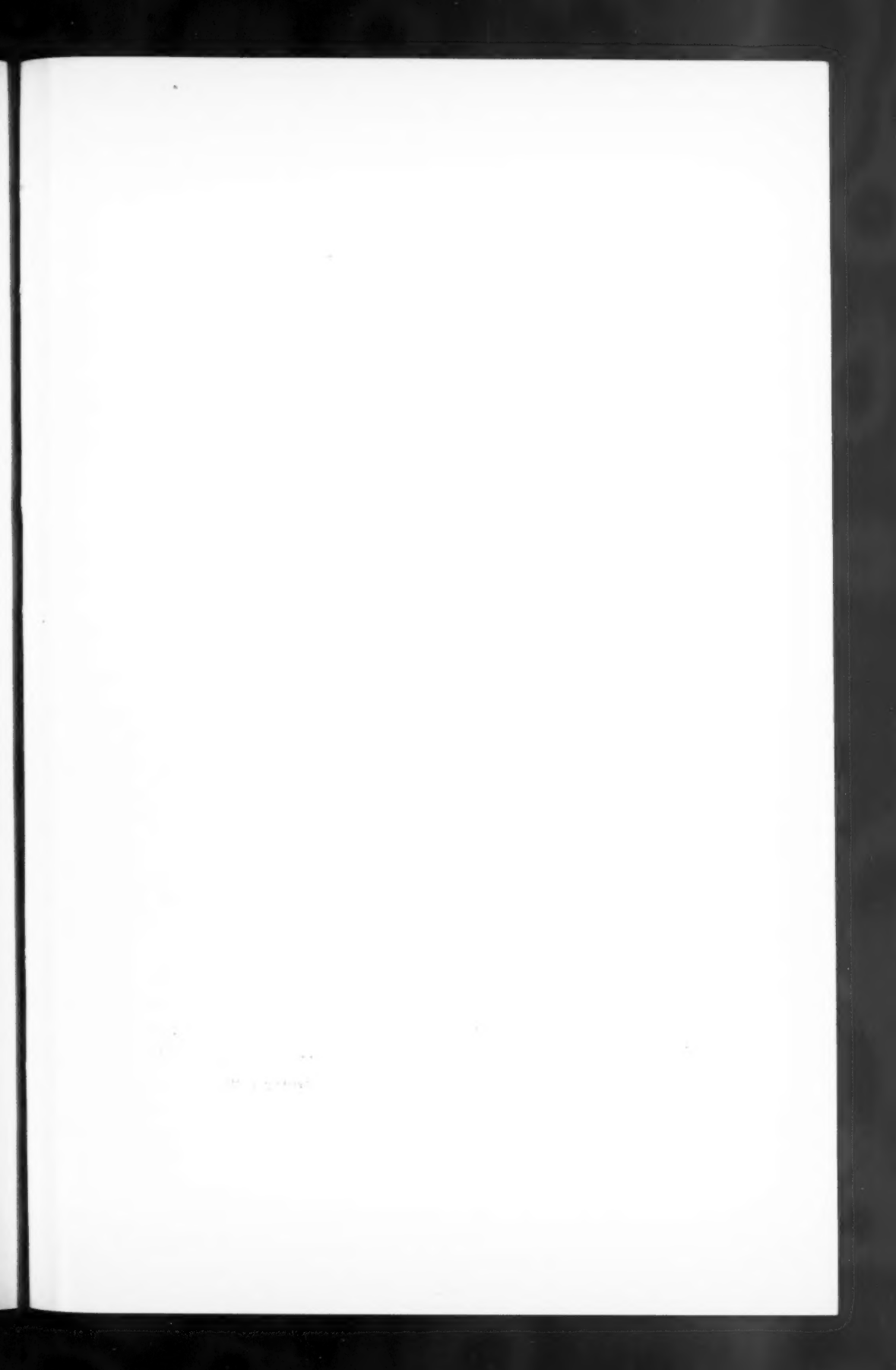
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AVICENNA

CLINICAL MEDICINE AND SURGERY

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Avicenna

WHEN the spiritually stifling cloud of the Dark Ages settled down upon the world, the light of the Greco-Roman civilization was almost extinguished. A spark of the divine fire was, however, carried to the East by the despised and persecuted Nestorians, where the clever Arabians rekindled it into a flame, until Bagdad became almost a Moslem Athens.

In the Eastern Caliphate, three Persian physicians stood out above all others, and one of these was Ibn Sina, whose name later became latinized, so that he is now almost universally known as Avicenna.

This interesting personage, famed as a philosopher, as well as for his knowledge of the healing art, was born near Bokhara in 980 A. D., and led a wandering and spicy life, much along the lines so charmingly indicated, later, by the best-known poet of his nation, Omar Khayyam: So much so, in fact, that he was known as "the prince of physicians," became the medical adviser and vizier of several different caliphs, and gathered the primroses of life so industriously that his labors came to an untimely close at Hamadan, in 1037, he being in the flower of his years.

Ibn Sina was, at one time, physician-in-chief to the celebrated hospital at Bagdad, and is said to have written more than a

hundred treatises on various subjects, including physics, logic, geology and metaphysics, as well as medicine.

He was a devout follower of Aristotle and Galen, and his best known work is his "Canon of Medicine," a ponderous tome, written in Arabic, intending to codify the entire medical knowledge of his time. This tremendous manuscript was later translated into Latin and was the basic textbook and ultimate authority in many of the European universities, up to as late as the seventeenth century.

Avicenna is said to have been the first to describe the preparation and properties of sulphuric acid and alcohol (the latter is an Arabic word). He also wrote about the guinea-worm and anthrax (calling it "Persian fire"); recommended wine as a dressing for wounds—a method which became very popular; and gave a good account of diabetes, including the fact that the urine had a sweetish taste. He must have been a really clever practitioner in order to deserve even half of his contemporary reputation and popularity. In his "Canon" he devoted four chapters to the hygiene of the new-born and nineteen to the hygiene of adolescence. He also mentioned, among the diseases of the young, tetanus, worms, convulsions, rheumatism,

meningitis, cerebral and umbilical abscesses and hydrocephalus.

On the whole, however, the weight of his immense authority was not on the side of progress, for he laid more stress upon the following of precedents and argumentation over details than he did upon the first-hand observation and recording of clinical facts.

His work cannot, none the less, be overlooked by any student of medical history, for he was one of the wise ones who kept the torch of medical knowledge burning in the vitiated atmosphere of medievalism, until the Renaissance came to revive the drooping plant of wisdom and set its long-buried seeds to germinating.

A significant age is the creation of significant men.—Dr. Gerald B. Webb.

Phagocytes and Non-Specific Therapy

AMONG the therapeutic advances of the recent years, few are of greater importance or have given rise to a richer and more varied literature than has the use of non-specific protein substances and certain synthetic chemicals in the treatment of diseases due to the lowest orders of vegetables and animals—bacteria and protozoa.

Practically all writers on this subject are agreed that remarkable results are produced, in many if not all types of infective disease, by the parenteral injection of such widely varying substances as boiled milk; killed typhoid bacilli and other bacteria; proteose; complex organic compounds of arsenic, mercury, bismuth and other metals; blood serum; and a long list of other things, but there seems to be little or no unanimity of sentiment as to how these results are brought about.

When the great empiricist, Ehrlich, propounded his elaborate and complicated side-chain theory of immunity, the medical world seized upon it with avidity (perhaps because, being difficult to understand, it ap-

pealed to those who have a tendency to overlook that which is simple and obvious; and perhaps because, during the last years of the nineteenth century and the first of the twentieth, medical thought was largely dominated by the Germans). We still, to a large extent, retain it today, in spite of the newer knowledge which the past decade has brought us.

A somewhat older contemporary of Ehrlich, Elie Metchnikoff, a Russian, also propounded a theory of immunity which was much simpler and more direct, but which, perhaps for the reasons just mentioned, excited little popular interest or appreciation and has remained largely in abeyance during the twenty-five years since his remarkable but little-known book, "Immunity in Infective Diseases" was published in English.

Recently an American physician—an empiricist, like Ehrlich, rather than a scientist, as that word is usually understood—Ferguson, of Birmingham, has been rather actively resurrecting Metchnikoff and his ideas and laying much stress upon the importance of the leukocytes as factors in the cure of infections.

Probably the most recent and authoritative statement of the orthodox view of the present status of non-specific therapy is presented in Dr. Joseph L. Miller's 1930 Frank Billings Lecture, which appears in the *Journal of the American Medical Association* for August 16, 1930.

Dr. Miller tells the story of the man who originated the non-specific, polyvalent vaccines which were later known as Phylacogens, and shows how, in spite of the fact that they were heterodox (autogenous vaccines were then the fashion), they worked. He also mentions Lüdke's satisfactory results from injecting a solution of proteose, which gave this method the name of "protein therapy."

Following this, he sketches the history of the observations which led to the discovery, by Fehleisen, Emmerick, Rumpf, Wagner-

Jauregg and others, that high fevers of various kinds, natural or artificially produced, frequently cured infections, and recites instances of the various diseases which have been cured by non-specific protein injections and by chemotherapy, calling attention to the fact that it cannot reasonably be the small quantities of the mineral drugs themselves that do the work, but that they must undergo some change or stimulate some processes in the body, in order to produce the disproportionally great results which are regularly observed and which have been so abundantly reported in the literature that they need only be mentioned here.

Dr. Miller's perfectly valid conclusion, in his own words, is: "It is quite probable that the body has a reserve store of non-specific antibodies for emergencies."

Now, no one has ever seen these antibodies, about which the disciples of Ehrlich write so glibly. They are purely hypothetical structures, like the genes in the chromosomes, which are supposed to carry hereditary characteristics. But every medical man has seen leukocytes. There is nothing at all mysterious about them; and their increase in the blood, during the course of infections, is a matter of common medical knowledge.

In 1903 or thereabouts, Sir Almroth Wright and his co-workers discovered that the injection of vaccines increased the phagocytic activity of the leukocytes for certain micro-organisms, and propounded the *opsonic theory*, so named because he believed that the specific vaccines acted upon specific bacteria in such a way as to prepare them for ingestion by the leukocytes. About 1910, the taking of the *opsonic index* in infections was a rather general laboratory procedure, which has, of late, fallen into almost complete desuetude.

It seems not to have occurred to Wright that the effect of the vaccine might, conceivably, be upon the leukocytes, rather than upon the specific organisms, but the recent developments in non-specific therapy

appear to make the latter hypothesis decidedly reasonable; and Ferguson's demonstration that the injection of such diverse drugs as highly-diluted hydrochloric acid and colloidal mercury sulphide can increase the phagocytic power of the leukocytes for most if not all types of bacteria, including the rather resistant tubercle bacillus (see CLIN. MED. AND SURG., Dec., 1929, p.884), lends support to such an idea.

In reading the large number of articles on non-specific therapy which are constantly appearing in the periodical literature, one is first impressed by the remarkably similar clinical results produced by surprisingly dissimilar means, and then by the variety of the theories which are invoked to explain these consistent results.

If one accepts the idea that leukocyte stimulation is the common and predominant factor in these cases, the result is a distinct clarification of one's thought processes. Specific and non-specific vaccines and serums; a long list of drugs, especially metallic salts; heat and other forms of radiant energy, including x-rays; and various other procedures do, beyond reasonable doubt, act beneficially in infections. Upon investigation, it appears that all of these measures cause an increase in the numbers or phagocytic activity of the leukocytes or both, and that, so far, seems to be the only effect which is common to the entire list.

Ehrlich's pronouncements have long been accepted by the medical profession as "the law and the prophets," and his nomenclature is still prominent in almost all writings dealing with immunity. All of these things may be true, but, in the present somewhat chaotic state of orthodox opinion regarding the immensely important subject of non-specific therapy, we feel that every sincerely interested physician should spend some time with Metchnikoff's book—at least enough to read the "Summary" at the end, which is one of the most masterly pieces of scientific writing we have ever seen—and should let the light so obtained

shine upon the somewhat confused and murky domain of immunology and note the result. Perhaps Miller's "reserve store of non-specific antibodies" may actually be the leukocytes.

To us it appears, after a fairly diligent study of Ehrlich and of Metchnikoff and the constant perusal of current articles on non-specific therapy, that, whatever recon-dite substances—opsonins, amboceptors, antibodies and the like—may hereafter be actually demonstrated in the blood serum and other body fluids, to offset the observed fact that immune serum not infrequently exercises a definitely *stimulating* effect upon the growth of the specific microorganisms*, the fact remains as true today as it was thirty years ago, when the famous Russian scientist first announced it, that "The one constant factor in immunity, whether innate or acquired, is phagocytosis."

We never establish a truth by sitting back and saying it is not so.—Dr. Chas. L. Dana.

THE ARMY AS A MEDICAL CAREER

MOST medical students, in considering their work, class their intern year among the liabilities, as few of them receive more than their board and room in return for the services they render to the hospitals in which their final undergraduate clinical instruction is received.

After they are graduated and licensed, these young men expect to spend from one to five years in establishing a practice, during which years they are rarely so sanguine as to imagine that they will be self-supporting, unless, of course, they elect or are forced, by the necessity of earning a living, to enter upon general practice in some small community, where financial returns begin to come in (though not very freely) almost at once.

To those who lack the extensive finan-

cial backing necessary for the lean years of breaking into a city practice, and who yearn to be "on their own" at the earliest possible moment, the Army offers many powerful inducements.

The young graduate who elects to serve his internship in one of the excellent Army Hospitals where such service is utilized is assured of high-grade clinical instruction (which, of course, he would get in any good hospital), with the notable addition that he is, at once, commissioned as a First Lieutenant, Medical Reserve, by which he becomes entitled to the pay and privileges of that grade. This means a salary of \$2,000 a year, plus heated and lighted quarters and other allowances which add at least half that sum.

When his intern year is completed, if he decides to continue in the Army, he is commissioned in the Medical Corps, in the same grade. Two years later (his intern year counts for promotion) he becomes a Captain, with increases in pay and allowances; and thereafter, at suitable intervals, he is promoted to the higher grades, with his emoluments, privileges and responsibilities steadily increasing.

The Army medical officer has abundant clinical experiences, with opportunities to develop his powers in any special line he may elect, and time to do as much studying as he desires. Special courses in the country's leading schools are open to him, if he shows particular aptitudes. A month's leave of absence, on full pay, each year is his due. Foreign travel and residence, at the Government's expense, come in the regular line of his service.

In case of illness, no matter how prolonged, he is cared for in an Army hospital, at no expense save that for his board, and his pay continues. The same service is available for the members of his family. If he becomes permanently disabled "in line of duty" (which includes practically everything except venereal diseases, alcoholism and personal fights), he is retired on three-quarters pay for the rest of his

*See "Critique of Ehrlich Theory," by W. H. Man-
waring, in "The Newer Knowledge of Bacteriology
and Immunology"; Univ. of Chicago Press, 1928, p.
1078.

life. If he dies, his family receives a pension.

Come fair weather or foul—good times or bad—his pay and allowances go on just the same. He will never become a plutocrat on his pay; but he will never have to worry about a comfortable living nor about whether he can collect the money due him. He has no overhead for office expenses, and a satisfying social life is assured, at a minimum expense.

Finally, at the age of sixty-four years, when many physicians are anxiously figuring what stands between them and the poorhouse, he is placed on the retired list, with a salary of more than \$4,000 a year (the income on \$100,000) for the rest of his life.

To the man of energy and ambition, the Army offers opportunities for notable public service and personal advancement (consider Gorgas and Walter Reed); to the man who desires to develop a fully-rounded individuality, time for study and release from the harassments attending the earning of a living in these days of intensive specialization and fierce competition; to the man who has wholly or largely financed his own education and needs to become self-supporting at the earliest possible moment, a chance to step directly from the portals of the medical school into a good living; and to all, an ample and assured income, with an opportunity to increase it by outside efforts if they so desire, for their declining years.

Truly, the Army as a medical career is worthy of serious consideration.

Worry is a leak through which energy is waste-fully dissipated in the unknown void of the future, instead of being constructively applied in the present.
—Eugene Fersen.

Clinical Research

MANY people (including far too high a proportion of physicians) have the impression that all or most of the progress in the Healing Art during the past half-century has been made in the field of surgery or in that of refinements in methods

of diagnosis. There is also a rather general idea that our knowledge of the value of most of the drugs now in use was arrived at through an empiric system of trial and error.

Therapeutic nihilism and an unwarrantably implicit confidence in the *vis medicatrix naturae*, on the part of medical men, have played directly into the hands of the irregulars who, whatever may be their shortcomings, convince their patients that something is being *done for them*.

Nature's power to cure is tremendous, but something appears to offset this power, so that natural recovery does not take place, or does so only very rarely, in such diseases as syphilis, cancer, amebic dysentery, tetanus, yaws, leprosy, diabetes, etc., all of which, except cancer (at present), can be ameliorated or cured by drugs.

In thinking along this line, it is well for us to remember that the laboratories have given us, in the past fifty years, as a direct result of fully planned research work—not empiricism—the arsphenamines and bismuth preparations; all our active and safe hypnotics and analgesics; all our serums and vaccines; and most of our antiseptics. What medical man of today would attempt to practice his profession without these invaluable remedies?

As few public institutions are interested in or endowed and equipped for this type of investigations, we are indebted to the research laboratories of our great pharmaceutical houses for most of our progress in the field of drug therapy.

But after the chemist and the pharmacologist have done their work and have furnished us with products which are not dangerously toxic, while producing physiologic effects promising a high degree of therapeutic value, there is a dearth of clinical investigators, equipped with the necessary scientific spirit and enthusiasm in the pursuit of truth, to carry out upon human beings those carefully controlled and recorded tests which will determine the exact field of usefulness and specific limitations

of the new compounds, as remedial agents.

Medicine has made enormous strides during the past generation, but would have gone much farther if physicians in general were endowed with a greater degree of scientific curiosity and imagination and could be prodded out of the sluggish backwater of reactionary conservatism and professional lethargy, in which too many of them have been stagnating for years, and made to take an enthusiastic interest in bringing the discoveries of the researchers to bear upon the relief of human pain and the cure of man's diseases.

Our enthusiasms are to be tempered with reason; yet reasons are false if they inspire no enthusiasm.
—Arthur Goodby.

THE NATIONAL INSTITUTE OF HEALTH

CONGRESS has passed the Ransdell Bill, authorizing the establishment of a National Institute of Health. This may, very possibly, mark the beginning of a new chapter in the history of scientific Medicine.

The declared object of the bill was "to promote the health of human beings, to improve their earning capacity, to reduce their living expenses, to increase their happiness and to prolong their lives." Truly a vast and ambitious undertaking!

The plan is that the Institute shall take over the equipment and the duties of the Hygienic Laboratory of the Public Health Service and shall expand the physical plant and the scope of the work as rapidly as possible. The Bill appropriated \$750,000 for the construction and equipment of new buildings and authorized the Government to accept unconditional bequests and other gifts for research pertaining to diseases of man and all pertinent matters and for the acquirement of lands and buildings for the

suitable accommodation of laboratories wherein such work may be carried on.

The idea is to develop a great chemico-medical laboratory, where the scientists of the world may cooperate in solving some of the pressing problems, in connection with the prevention and cure of disease, which confront the medical profession on every side—the problems of cancer, infantile paralysis, influenza, the "common cold" and many others.

A system of resident and non-resident fellowships is provided for, so that researchers of proved ability will be able to devote their entire time to the class of work for which they are best fitted and in which they can render their highest services to mankind. No project of this sort, of like magnitude, has heretofore been undertaken.

The new Institute raises very acutely the issue of a Secretary of Public Health. Who could administer a great organization of national scope, like this, so properly and effectively as could a member of the President's cabinet? It should not and must not be permitted to be merely an adjunct to the Public Health Service, valuable as the work of that organization's splendid personnel has been to the Nation. To bring the high hopes of its projectors to fruition, it must secure international cooperation.

This will be, not merely a place where actual research can be carried out, but a training school for workers in this line who have, up to now, suffered from many hindrances and have rarely been able to carry on, uninterruptedly, without the necessity of earning a living in other ways.

It is to be hoped that the Institute of Health will be so staffed, supported and administered that it will accomplish all the high purposes which seem to be within its scope.

LEADING ARTICLES

The Physiopathology of the Gall-Bladder*

By A. B. CONSTANT, M.D., Santiago, Chile

FOR A NUMBER of years we have believed that all essential factors concerning the surgery of the gall-bladder were understood and that the only details remaining to be determined were those concerned with perfecting operative technic. Recent studies in the physiology of the liver and gall-bladder lead us to consider their practical application in the rational treatment of diseases of the gall-bladder.

Functions such as that of bile receptacle, concentration of bile, absorption and secretion, interest us much less, from the surgical standpoint, than the contractile power of the gall-bladder, since this function, so much discussed recently, plays an important part in the normal functioning of this organ. Variations in the contractile power of the gall-bladder would produce, in themselves, a syndrome apart from cholecystitis and cholelithiasis—the dyskinesias in which the vesicular contraction would take a place of first importance in the production of the affection.

Doyen, in 1893, was the first to establish the existence of spontaneous slow contractions of the gall-bladder and to declare that they depended upon the nervous system. Later, Bainbridge and Dale, after carrying through a series of complicated experiments, gave out the following conclusions:

"The gall-bladder presents rhythmical variations in volume, feeble in amplitude, unlike those of any other muscular hollow organ. The excitation of the sympathetic; that is to say, of the splanchnic nerve, and above all of the right splanchnic, produces a relaxation in the tonus of the gall-bladder, especially in the

neighborhood of the neck. The same action is obtainable with intravenous injections of adrenalin (epinephrin). On the other hand, parasympathetic excitation, produced over the entire periphery of the vagus (of the left vagus especially), results in a slight increase of rhythmic tonus."

These authors think that the vagus contains motor fibres of the gall-bladder.

The observations of Bainbridge and Dale agree, in every way, with those of Lieb and McWhorter, who prove, to their own satisfaction, that the excitation of the parasympathetic, using pilocarpine and physostigmine, produces an increase in tonus, while atropine and adrenalin produce relaxation.

In 1917, Meltzer, physiologist of the Rockefeller Institute, proposed his famous theory of the existence of contrary innervation between the gall-bladder and the sphincter of Oddi, according to which he thought that the relaxation of the sphincter was accompanied by simultaneous contraction of the musculature of the gall-bladder. He found that a 25-percent magnesium sulphate solution, in contact with the duodenal mucosa, produces a localized relaxation of the duodenum and of the sphincter, with outflow of bile. This author believed that this simple agent could be utilized clinically as a means of emptying the gall-bladder.

THE MELTZER-LYON TEST

In 1919, Vincent Lyon, following the suggestions of Meltzer, proved, in man, that a few minutes after the solution of magnesium came in contact with the mucosa of the duodenum, there was extracted, with a duodenal tube, a dark liquid, which

*From the Surgical Clinic of Professor Sierra.

he considered to be bile from the gall-bladder. He thought it would be possible thus to drain the entire biliary tract. This procedure has been named, for its promoters, the Meltzer-Lyon test.

To this physiologic concept, Einhorn and other authors are opposed. To them, the excretion of the dark bile that follows the magnesium sulphate instillation is due to the salt being absorbed by the duodenal mucosa and carried to the liver by the portal route, activating the functions of the hepatic cells. Under this influence, the bile is made richer in pigment and biliary salts; its density is from 1013 to 1050. According to Einhorn and his followers, the dark bile, after the instillation of the magnesium, represents then a product of hyperactive hepatic secretion and in no way an isolated vesicular bile.

Clinically, the Meltzer-Lyon test has been subject to grave criticism, in that certain authors have obtained the bile "B" in cholecystectomized subjects. This objection has been made by Einhorn, Crown, Reiss and, among others, Dunn and Connell, who obtained the bile "B" in a woman whose gall-bladder and choledochus had been removed and whose hepatic duct had been anastomosed to the duodenum.

The majority of writers on this subject, Higgins, F. Mann, Boyden, Chiray, Rost and many others, agree regarding the fact that the Meltzer-Lyon test gives, clinically, bile "B," which corresponds to that in the gall-bladder. The great amount of cholesterol contained in this bile and the presence of cylindrical epithelial cells, revealed by microscopic examination, affords evidence that the liquid in question is of vesicular origin.

MECHANISM OF GALL-BLADDER EMPTYING

Let us see, then, what is the mechanism of the emptying of the gall-bladder.

Boyden has called attention to the fact that, in the vesicular walls, there is a marked lack of muscular fibres, as compared with an abundance of elastic fibres.

Experimentally, vesicular contractions have been proved by different authors, from the first investigators, which I have already named, to the more recent ones, such as Chiray, Milochevitch, Pavel, Rost, Bergmann, Houssay, of Buenos Aires, etc. Although they exist, in no way can they be compared to those of other hollow organs, such as the stomach or urinary bladder. They are really only slight rhyth-

mic changes in tone which are produced three or four times a minute, especially during digestion, and that are entirely too weak to produce, alone, the biliary evacuation. What occurs is probably, not a real contraction, but a change in volume due to the elasticity of the walls.

The cholecystogram and its clinical application are very useful in the study of physiologic problems of the mechanism of emptying the gall-bladder. It is evident that, although the size of the gall-bladder is reduced, the reduction is in no way caused by muscular contraction.

Copher has demonstrated that if a dog is given a daily injection of tetraiodophenolphthalein, for a period of several days, the gall-bladder will become permanently visible during the entire time of experimentation.

As a result of this test, the fact is clearly established that the gall-bladder never can, under normal conditions, become completely empty; moreover, the test suggests that the contraction of the musculature of the vesicle plays an insignificant part in the emptying.

It is possible, moreover, that other factors enter into the emptying of the gall-bladder: (1) abdominal pressure, with or without added pressure resulting from respiration; (2) constant, gradual renewal of the supply, by the arrival of fresh quantities of hepatic bile; (3) the elastic retraction of the distended vesicle when the pressure in the choledochus suddenly decreases, through the opening of its duodenal extremity; (4) absorption of the contents through the walls.

Recently, Evarts Graham, Copher and Kodama have been able to demonstrate that only two mechanisms enter into the emptying of the gall-bladder: the gradual renewing of the supply of bile, by the arrival of hepatic bile; and the elastic retraction of its walls.

These concepts are opposed to the current idea that certain substances, such as magnesium sulphate and pituitrin, empty the gall-bladder by causing a contraction of its walls. It is commonly accepted, also, that the sphincter of Oddi is a factor of great importance in the regulation of the flow of bile to the duodenum. Through recent anatomic studies by the authors just cited, it has been demonstrated that the sphincter of Oddi does not play an important part in the flow of bile to the

duodenum. It must be remembered that the choledochus passes obliquely across the duodenal wall, for a distance of 2 to 3 centimeters. Therefore, the contractions of the duodenal wall tend to occlude the choledochus, independently of the sphincter of Oddi. Reciprocally, duodenal relaxation would permit the outflow of bile, without taking into account the action of the sphincter.

Experimentally, it has been seen that each peristaltic wave of the duodenum stimulates the flow of bile through the ampulla of Vater. The initial phase of relaxation, followed by a contraction in each peristaltic wave, would produce an effect of milking the choledochus. Each peristaltic wave would produce, moreover, an elastic retraction of the gall-bladder, causing the flow of a small quantity of bile. Similarly, those substances that activate duodenal peristalsis would influence also the emptying of the gall-bladder. The supposed specific effect of pituitrin and of magnesium sulphate on the emptying of the gall-bladder seem to depend, principally, upon the production of duodenal peristalsis.

Moreover, these substances have less effect than certain fats, such as cream and the yolk of egg. This has been demonstrated by Boyden. Sosman, Whitaker and Edson have found that one meal, containing yolks of eggs and cream, could reduce the cholecystographic shadow to one-tenth of its normal size within an hour and forty-five minutes. Copher and Kodama have found that oleic acid has a still more powerful effect. Burget and Carlson, in their investigations, have attached great importance to the tonus of the duodenal musculature in the control of the flow of bile and consider that the action of the sphincter of Oddi has been exaggerated.

In conclusion, we may say, interpreting the ideas of Graham and his collaborators, that the more recent experimental work shows the inexactness of the hypothesis of Mentzer, of the contrary innervation of the sphincter of Oddi and of the gall-bladder, through which it is supposed that the stimulus that opens the sphincter produces a contraction activating the musculature of the gall-bladder. On the contrary, it is believed that the emptying of the gall-bladder is, frankly, a passive phenomenon and is produced: (1) by the retraction of the elastic fibres, in order to establish equilibrium of pressure between the lumen

of the gall-bladder and that of the choledochus, when the pressure upon this latter is suddenly lessened through the opening of the duodenal end; (2) the constant replenishing, by the arrival of a fresh supply of hepatic bile; (3) the increase in intra-abdominal pressure. Moreover, in the control of the flow of bile from the choledochus, the more important factors seem to be the tonus and the peristaltic movements of the duodenal musculature.

The discovery of certain halogen dyes made possible the direct radiologic visualization of the gall-bladder, with the result that each day the cholecystograph is more frequently used and has become the simple and reliable method of diagnosis, in the great majority of diseases of the gall-bladder. With the help of opaque coloring matters, the details of the radiologic picture have been rendered clearer, and never has diagnosis been so accurate as when the x-rays have been employed in the study of gall-bladder disease.

But it would be a grave error to believe that a radiograph, without a careful clinical examination, suffices for a diagnosis of cholecystitis. Cholecystography has brought a very valuable element of certainty in 90 percent of cases, for English and American authors; and among ourselves, in Chile, in 75 percent (Dr. Coghlan, Santiago de Chile). Dr. Case, of Passavant Hospital, Chicago, gives close to 98 percent positive diagnoses.

The investigations of Oddi, in 1887, and before him the experimental studies of Zambecari, establish as a demonstrated fact that extirpation of the gall-bladder brings about, secondarily, a dilatation of the choledochus or of the extra-hepatic ducts, in experimental animals.

Bile that remains in the gall-bladder some time is much more concentrated than the normal and is dark, because of the proportional increase in biliary pigment; the importance of this concentration has not been demonstrated. It is clearly indicated that the function of the gall-bladder is storage, but because of its small size, compared with the quantity of bile secreted, the water must be absorbed and the active elements retained in concentrated form. The importance of this function has not been estimated; only it is known that, upon the removal of the gall-bladder, there are no clinical signs of the slightest alteration, as is shown in cholecystectomy.

It is said that the choledochus assumes the function of the concentration of bile when the gall-bladder is removed; but experimental data, apparently, show that this is not possible. It is more probable that, when the gall-bladder is removed, this function is eliminated. It has been proved that the loss of this organ produces no change in the life of the patient.

It is said that the concentration of bile is the cause of the frequency of calculi in the gall-bladder and that, after cholecystectomy, calculi are more apt to form in the choledochus. Clinical studies and experimental data do not confirm this hypothesis. According to Judd, calculi do not form in the choledochus with greater frequency after cholecystectomy. Moreover, experiments apparently indicate that bile is not concentrated in the choledochus.

Much has been said, and insistently, concerning the dilatation of the choledochus after cholecystectomy, in experimental animals; but no account has been taken of the difference between a healthy dog, with normal biliary passages, and a man with a disease of the biliary tract, in whom the liver surely also functions in a pathologic manner. In more than one operation, in which we encountered a gall-bladder with calculi, atrophied, not functioning and that had given a negative cholecystograph, we saw that the choledochus commonly presented normal dimensions and we could not find any of the manifestations that appear in the experiments with animals.

OPERATIVE COMPLICATIONS

Results of operation upon the gall-bladder and biliary passages are usually very satisfactory. Nevertheless, in some cases in which the best results are anticipated, the symptoms continue or reappear. Since cholecystectomy has become common, it has been proved that the reappearance of symptoms is caused, almost without exception, by calculus of the choledochus. In some cases the calculus formation may occur after the cholecystectomy; but in a good number of patients the symptoms appear so quickly after the intervention that it is clear that it already existed at the time of operation and was overlooked by the surgeon.

The prompt recognition, at the moment of intervention, of other foci of abdominal infection usually associated with diseases of the gall-bladder, appendix, female genital

organs, stomach, duodenum, etc., that might give a similar symptomatology; and, on the other hand, the recognition of the possibility of the more frequent complications, such as hepatitis and pancreatitis, have enabled us to avoid postoperative complications in a good number of cases, and in others they have enabled us to anticipate postoperative complications, that were cured by well-directed, postoperative medical treatment. Of course, it is a routine procedure among surgeons, before operation, to go over the mouth and other parts of the body for foci of infection. Progress in surgical technic and the abolition of drainage in most operative cases, have reduced postoperative complications to the minimum.

I do not wish to ignore certain complications inherent in operative intervention, such as adhesions that already may be present in the upper abdomen or localized around the duodenum, constituting **periduodenitis**. Surgeons always strive to avoid the grave disorders caused by such adhesions by adopting an appropriate technic. Nevertheless, statistics still show a number of these cases.

Numerous cases of this complication have been published by Kehr, Deaver, Hartmann, Duval and others; the clinical symptomatology has been established and, after numerous attempts, a correct technic has been acquired to cure these adhesions.

The cause of secondary appearance of such adhesions is difficult to determine and, as in all perivisceritis, there is a difference of opinion. I believe the primordial causes are the following: operative technic, individual predisposition, pericholecystitis and lesions of neighboring organs, not recognized at the time of operation.

Periduodenitis appears in a rather large number of cases. Whatever may be the nature of the lesions found in the gall-bladder, the number is lowered when the better types of operation are used. At times it is due to the persistence of periduodenitis present before operation or provoked by operation. Its symptoms are: sensation of weight in the epigastrium; nausea; vomiting; finally the patient tolerates only liquid food; symptoms that reveal a syndrome of incomplete peri-duodenal stenosis. Periduodenitis has been studied by Hartmann, P. Duval, Graff, Weinert, Walsel, A. Robbani, of Buenos Aires, and others. It is a common surgical complication, which often exists, as a postoperative

anatomic lesion, without giving special trouble, and the patient remains clinically cured.

The acute cholecystic insufficiency, to which some authors attach so much importance among the postoperative complications, according to the recent studies of Chiray and Pavel, and experiments on the duct by Rost, of the surgical clinic of Heidelberg, of Bergmann, and other experimentors, is, for the surgeon as well as the internist, of very little importance. Even though, in certain patients, there are functional derangements due to extirpation of the gall-bladder, they are of recent appearance, pass quickly and the function of the gall-bladder, considered of questionable value by most investigators, is soon replaced by a certain degree of dilatation of the extrahepatic ducts. This has been observed by many.

MODERN IDEAS OF GALL-BLADDER DISEASE

Let us now see what is the modern surgical concept of gall-bladder disease. The pathologic problems presented are numerous and varied. What is the origin of the infection? Is it by way of the blood, lymph or bile? How are calculi formed? What is the explanation of the symptoms of biliary dyspepsia? What relation is there between cholesterin and the diseases of the gall-bladder, hepatitis and cholecystitis? What significance has the "strawberry gall-bladder," etc.? In this brief review I am able to sketch only the most important points.

Biliary disease is very common among us. In a total of 10,000 female patients in the last 5 years (Hospital San Vicente, Santiago de Chile), we have had 930 cases of cholecystitis and 1086 of appendicitis. As can be seen, the number of cases of biliary disease in women is only a little smaller than that of appendicitis. As regards the presence of calculi, we find that our figures correspond to those of the Mayo Clinic—about 40 percent of the cases of cholecystitis show no calculi.

In times past, the possibility of trouble from the presence of calculi was overestimated; numerous works have been published on the rôle they played in the pathogenesis of hepatic colic and the pathologic changes which the bile presented; but today we know that the presence of calculi is not important and that we encounter them incidentally in diseases of the gall-bladder. They can, however, give rise to dramatic

symptoms and distract the attention of the doctor from the essential problem, the condition of the gall-bladder.

When the surgeon opens the abdomen in search of a diseased gall-bladder, he may find one of three types: (1) Inflammation, acute, accompanied frequently by calculi; (2) chronic inflammation, with or without calculi; (3) little or no apparent alteration in the gall-bladder, but when opened, its mucosa appears covered with very small, yellow spots, to which condition MacCarty has given the name "strawberry gall-bladder."

The name "strawberry gall-bladder" was used by MacCarty because of small, yellow spots, scattered over the red background, giving the gall-bladder the appearance of a ripe strawberry. MacCarty at first thought this was due to desquamation of the epithelium covering the villi, permitting impregnation of bile into the adjacent connective tissue. Later he recognized that the yellow color was the result of deposits of lipoid and that the epithelial desquamation was produced by the manipulations during investigation.

Some authors, among others William Boyd, believe that the perfect understanding of these lipoid deposits, in the form of cholesterin esters, may explain the first step in the formation of calculi. The exact cause of the lipoid deposits is not known, but it is believed that inflammation is the most probable factor; yet, in many cases of this sort, Boyd has found clear signs in the mucosa and deeper layers.

Many years have passed since Rosenow gave us his interesting observations and experiments on cholecystitis. From the wall of the inflamed gall-bladder he obtained cultures of streptococci which, injected into animals, seemed to have a special affinity for the gall-bladder. Later, the experiences of P. D. Wilkie, professor of surgery at Edinburgh, and of Illingworth, who used the culture mediums of Rosenow, were able to prove the presence of streptococci in the wall of the gall-bladder in a goodly number of cases in which the bile appeared sterile. Then microbes of the coli type were not very much in evidence, except in cases of acute suppuration.

A. L. Wilkie has shown that cholecystitis is almost invariably an intramural streptococcal infection, and he verified the thesis of Rosenow as to the elective affinity of these microbes for the gall-bladder in ex-

perimental animals. Moreover, he has proved that, in more than 25 percent of the cases of chronic cholecystitis frequently associated with calculus, the streptococcus is encountered in pure cultures in the cystic ganglion. In a smaller percentage, the same microbes are found in the submucosa of the gall-bladder, if care is taken to protect the tissues that are removed for culture from contact with bile. He showed that bile impedes the spread of these streptococci.

The same author injected cultures of streptococci obtained from the human gall-bladder into the vein of the ear of a rabbit and produced a progressive chronic cholecystitis in the animal, with or without previous ligation of the cystic duct. The microbes that came to the biliary vesicle through the blood stream produced an intramural infection, the bile remaining sterile; from the vesicular wall, the microorganisms are absorbed through the lymphatics. In this lies the importance of the gall-bladder as a focus of infection.

In our country we have made bacteriologic examinations of the walls of gall-bladders removed and of the bile. Dr. Arcesio Velez, alumnus of the Clinic of Professor Sierra, examined 42 gall-bladders and obtained positive cultures in 69 percent of the cases, in the great majority the organism being the colon bacillus. In all cases there were frank inflammatory lesions of the wall of the gall-bladder.

In a series of 27 gall-bladders examined in the Clinic of Dr. Sierra, 22 yielded positive cultures and 5 were sterile. In every case the cultures from the cystic ganglions were negative. *Bacillus coli* predominated in 11 cases; streptococcus in 5 cases; staphylococcus in 3; and Eberth's bacilli in one case. In only 2 cases did we find the *Bacillus coli* in the bile.

In these two series of experiments, carried out by different doctors, at different times, in two different hospitals, the *Bacillus coli* was found to predominate; and this leads us to believe that from the intestine, where these germs originate, they pass to the gall-bladder by way of the lymphatics, through the general circulation, or by way of the portal vein.

Based on these modern experiments, medical treatment of cholecystitis, to be rational, must be directed against intramural streptococci and colon bacilli, attacking them directly in the blood, with some vaccine for example, or with some agent

that can be absorbed through the walls of the gall-bladder. Medicaments with which one attempts simply to disinfect the bile can not be effective, since the bile, in most chronic cases, is sterile.

Surgical treatment, in most chronic cases, is clearly indicated, and this treatment consists in extirpation of the diseased wall of the gall-bladder, and only exceptionally in simple drainage of it.

RESUME

1.—The mechanism of emptying of the gall-bladder is discussed and the theory of Meltzer, of contrary and reciprocal innervation between the sphincter of Oddi and the gall-bladder, is considered very doubtful.

2.—The musculature of the wall seems to play a very unimportant part in the emptying of the gall-bladder.

3.—The mechanism of emptying seems to be frankly passive, the most important factors being elasticity of the vesicular walls, constant flow of hepatic bile, and change in intra-abdominal pressure.

4.—Control of the flow of bile from the choledochus depends principally upon the tonus of the duodenal wall.

5.—The substances that are believed to have a specific effect on the emptying of the gall-bladder, probably owe their action to the excitation of duodenal peristalsis, effecting a "milking" action on the choledochus.

6.—Infection of the gall-bladder is probably the most common of all abdominal affections, particularly among persons of sedentary habits.

7.—It is frequently an intramural streptococcal or colibacillary infection, coming to the gall-bladder by way of the blood stream, and often accompanied by calculi.

8.—When cholecystitis is frankly established, the only rational treatment is surgery; the results are highly satisfactory, if operation is performed before complications appear, such as malignancy, pancreatitis, hepatitis, toxic myocarditis, etc.

9.—The duodenal tube is useful in cases of advanced cholangitis and cholecystitis; but in the great majority of the cases it does not indicate the condition of the vesicular wall (sub-mucosa); on the other hand, it is known that bile appears sterile in chronic cases.

10.—Cholecystography is a useful method of diagnosis in a high percentage

of cases. But in no small number of observations, as much among foreigners as among ourselves, the cholecystographic shadow has been found normal, while at operation a frank cholecystitis appeared.

11.—While the new methods of diagnosis are very useful, a well-taken history, well interpreted, gives the correct diagnosis in most cases.

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The Army Medical Center*

By JOHN W. MEEHAN, M.D., Washington, D. C.
Major, Medical Corps, U. S. Army

THE ARMY Medical Center is located in Washington, D. C., about eight miles north and west of the Capitol. The reservation embraces 96.93 acres, and borders the site which witnessed the battle of Fort Stevens, in the Civil War. The skirmishing which occurred at this site was the nearest approach made by the Confederates on Washington.

The actual existence of the Center dates from September 1, 1923, when the War Department, by a general order, directed that the military reservation located in the Takoma Park section of the District of Columbia would be known as "Army Medical Center, Washington, D. C."

The need of such a military establishment seems to have been apparent to Surgeon General Hammond, during the Civil

War, as his report for the year 1862 recommends the establishment of a permanent general hospital in Washington and, connected therewith, a medical school for the special training of Army surgeons and the museum (medical) which was, at that time, in existence.

It was three decades before any steps were taken toward accomplishing the plan recommended by General Hammond, and not until 1893 was the Army Medical School established, through the persistent efforts of Surgeon General Sternberg. The School was conducted in the same building which housed the museum, at Seventh and "B" Streets, Southwest.

The need of a permanent general Army hospital was not, however, lost sight of, and in 1898 the post hospital at Washington Barracks was so designated, officially. This step hardly fulfilled the needs of the area,

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Walter Reed Hospital.

as the hospital was small and not equipped for special work.

In his annual report for 1902, Surgeon General Forwood strongly recommended the construction of a general hospital to meet the Army's needs in the District of Columbia. He suggested the Soldiers' Home grounds as a suitable site, or, if this seemed inadvisable, the purchase of 25 or 30 acres elsewhere in the District. It was his opinion that an area of this size would be necessary to contain a hospital, the medical school and the medical museum.

The following year, General O'Reilly again recommended the establishment of



One of the Gardens. Brick Connecting Corridor at Right.

a general hospital for the following purposes:

"1.—Treatment of cases needing the services of specialists.

"2.—Training enlisted men of the Hospital Corps in nursing and military duties.

"3.—Instruction at the Army Medical School in military surgery, hospital administration, Hospital Corps drill and establishment of field hospitals.

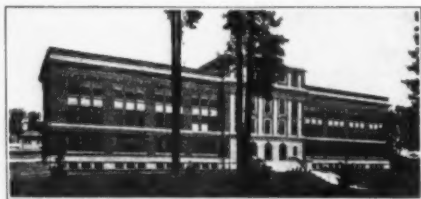
"4.—To serve as a nucleus around which, in time of war, temporary wards may be erected without delay, to any extent and at minimum expense."

Plans for such a hospital were prepared

at this time, but Congress failed to appropriate the required funds to begin the project. However, a board of officers was appointed by the Adjutant General to find a suitable location for such a hospital in the District.

WALTER REED HOSPITAL

In 1905, upon recommendation of the board, a tract near the northern boundary of the District was purchased. This area contained 42.97 acres and Congress appropriated the necessary \$100,000.00. The tract was announced as a military reservation one year later, and General Order No. 83, War Department, 1906, directed that it be known as the "Walter Reed U. S.



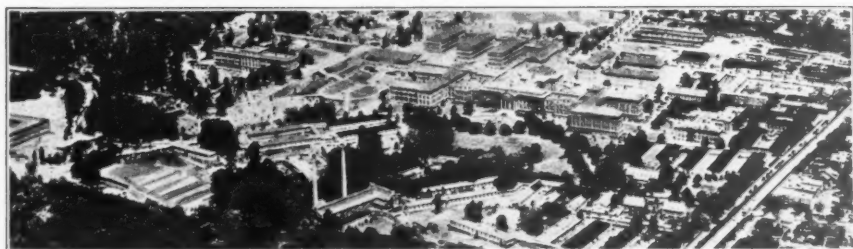
The Army Medical School.

Army General Hospital." (Major Walter Reed, renowned for his work on yellow fever, died November 23, 1902).

In February, 1906, an act of Congress made available the sum of \$200,000.00 for the construction of the Hospital, and in May, 1909, it was opened with a duty force of 5 officers, 62 enlisted men and 3 civilian employees. Company "C" of the Hospital Corps, with 1 officer and 82 enlisted men, was attached for duty, and one month later 4 nurses joined. The first monthly report rendered shows that 5 officers, 11 enlisted men and 1 civilian were under treatment.

During the next few years Walter Reed Hospital gradually assumed the status for which it was intended and, in April 1917, the returns show present for duty, 15 officers, 145 enlisted men, Medical Department, and 13 enlisted men, Quartermaster Corps; patients, 19 officers, 89 enlisted men, 3 retired officers, and 10 members of the National Guard.

The entry of the United States into the World War caused a great increase in military activities in Washington and its vicinity, and Walter Reed Hospital began a program of expansion, which continued during the next three years. Temporary buildings were constructed at once, and mul-



Airplane View of Army Medical Center (Walter Reed Hospital to right of center; Army Medical School, at left).

tiplied rapidly; more land was purchased; and, at the close of 1918, the Hospital's capacity was 2,500 beds.

Following the War, Surgeon General Ireland made immediate plans to enlarge the scope of Walter Reed Hospital and create an Army Medical Center. The Hospital itself had already attained its objective and was functioning as a modern clinic, wherein those entitled to treatment received the best service obtainable; a Nurses' Training School was established in May, 1918, and training courses were being given in dietetics, physical therapy and occupational therapy.

THE MEDICAL DEPARTMENT SCHOOLS

The Army Medical School was located in a rented building in the city proper and, while using the facilities of Walter Reed Hospital to some extent, was a separate unit. The Army Veterinary School had been functioning for some time in Chicago, and in 1922 the Army Dental School was organized and assigned quarters in the Medical School building. It seemed very desirable to concentrate all these educational activities on the Walter Reed Hospital grounds, where clinical and teaching facilities could be coordinated.

In 1923 a school building was erected west of the Hospital, at a cost of \$500,000.00, and the Army Medical School was transferred from its old location in September of that year. The Dental School likewise moved and was quartered in a temporary building. The Veterinary School was transferred from Chicago in 1924, and was also housed in a temporary structure.

The original plans for a school building called for two wings and a connecting section, in which would be placed an auditorium and the offices of Center headquarters. At the present time there is but one wing, occupied by the Medical School and

Center Headquarters. Plans and specifications have been drawn to complete the buildings for educational activities, and construction will begin this year. The finished building will house the Medical, Dental, Veterinary and Nurses' Schools, the Center offices, and will supply also an auditorium with a seating capacity of 400.

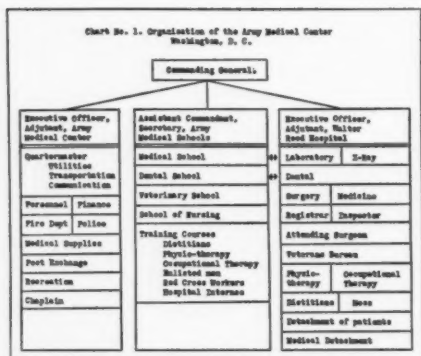
PRESENT AND PROJECTED FACILITIES

Practically all temporary frame buildings remaining from the War have been replaced by permanent brick structures, and at a date not far in the future the Army Medical Center will be quartered and equipped as planned and the dream of the Medical Department for the past half-century or more will be realized.

The Hospital consists of a main building, with right, left and rear wings. The administrative offices occupy the center portion, medical and surgical wards the side wings, and the rear extension contains the main kitchen, in the basement, dining hall on first floor, library on the second, and eye, ear, nose and throat and x-ray operating unit on the third floor.

Various wards for women, mental, contagious, venereal, heart and gastro-intestinal cases, the laboratory, etc., are in separate buildings, all connected with the main building by means of brick corridors. All buildings are of red brick with white stone trimmings, three stories and basement, and with ample pavilion space on each floor; the architecture is colonial.

Separate buildings of permanent construction are provided for the nurses' home, Red Cross activities, service club, power plant, laundry, utilities and supplies, fire department, chapel, enlisted men's barracks and schools and, when new construction is completed, the bed capacity will be 1,000; 400 of which are reserved for Veterans' Bureau patients.



At the present time there are sufficient officers' quarters to accommodate the commanding general and the directors of various hospital departments. Future plans contemplate additional quarters for officers and noncommissioned officers, barracks for enlisted men, a post exchange, gymnasium, and a suitable building for the Surgeon General's library and the Medical museum.

The strength returns for May, 1930 show the following duty personnel as of midnight, May 31: Officers (Medical, Dental, Veterinary, Quartermaster, Finance and Medical Administrative), 116; nurses (not including students), 113; warrant officers, 2; enlisted men, 560; civilian employees, 337; total, 1,128. Patients treated during the month of May, 1,451 (out-patients not included.)

Walter Reed is conducted as a general Hospital (treating all cases—surgical, medical, mental, contagious, etc.) for men, as well as women and children, the latter being limited to family members of the Army, Navy and Marine Corps. The routine of diagnosis and treatment is quite similar to that of any large, modern clinic; fully equipped laboratories, in the Hospital proper and in the various schools, supply the necessary adjuncts to the clinician. Active tuberculous cases are transferred to the Army General Hospital at Denver; and mental cases, after a certain period of observation and treatment, are sent to the Government Hospital for the Insane, in Washington, or to private institutions, if so desired by the relatives.

ARMY INTERNSHIPS AND INSTRUCTION

Walter Reed is an approved hospital for interns, and each year has 15 to 20 young men who have recently graduated in Medi-

cine. These doctors are commissioned first Lieutenants in the Medical Reserve, and during their year of service enjoy the pay and privileges of that rank. In order to secure an internship, the student submits an application to the Surgeon General, accompanied by a report of physical examination, recommendation from the dean of his school, and a transcript of his record as a student. Internships are also offered in Army hospitals at Denver, San Antonio, El Paso and San Francisco. Upon completing his year of service, the intern may be commissioned in the Medical Corps, Regular Army.

The Army Medical School has two primary functions; namely, the special instruction of officers new to the service, and the conducting of research problems. It also offers special courses to older officers; produces all the typhoid vaccine used by the Army, Navy and other Government activities, Reserve, National Guard, R. O. T. C. and C. M. T. C.; performs chemical analyses of water, food, drugs, etc., for the Army; makes routine bacteriologic examinations for all stations in the third Corps Area, and special examinations for Walter Reed Hospital and the Army at large. Its department of laboratories examines, or confirms, the findings on specimens in entomology, helminthology and protozoology from the entire service. The veterinary section produces all biologicals used in that service, as well as making all routine laboratory examinations.

The teaching at the school centers on preventive medicine, and the courses offered are similar to those leading to the degree of Doctor of Public Health. The clinical courses in Medicine and Surgery are conducted by the staff at Walter Reed Hospital. Instruction in field work and strictly military duties of the Medical Officer is given at the Medical Field Service School, Carlisle Barracks, Pennsylvania.

The basic course at the Medical School begins September 1 and ends January 31. The student body is composed of interns from the previous year's group and physicians recently commissioned from civil life. The latter group is composed of men under 32 years of age, who have a Doctor of Medicine degree from a Class "A" college, and have completed one year as intern in an approved hospital. They are accepted if successful in passing a physical and men-

tal examination, the latter being similar to the usual examination required to obtain a state license. The time spent by a Lieutenant, as intern and as a student at the Medical School, is credited to him for promotion and, at the end of three years' service, he is advanced to the rank of Captain; after 12 years' service to Major; 20 years' service to Lieutenant Colonel; and 26 years' service to Colonel. Advanced courses are conducted, for older officers, in preventive medicine, surgery, medicine and roentgenology. The school also trains enlisted men in laboratory and x-ray technic.

The Army Dental School conducts courses coinciding in time with those in the Medical School, and dental students attend classes and lectures with medical students, where the subject matter is related to dental practice. Classes at the Dental School number about ten officers, one or two of whom have been recently commissioned. Vacancies in this Corps are filled in a manner similar to that described for the Medical Corps, but, as the allowance of dental officers is small, the examinations are held infrequently and the acquisition of new officers is limited to one or two a year. The Dental School also conducts practical courses for enlisted dental attendants and oral hygienists.

The Veterinary School is conducted along lines similar to the Medical and Dental. The student officers attend certain classes in bacteriology, entomology and helminthology with the medical officers. Commissions in the Corps are obtained similarly to the above, and each year's class numbers from seven to ten officer students. Veterinary officers are commissioned as second Lieutenants, and one or two are added each year. Intensive training is given each year to a number of enlisted men of the Veterinary Corps.

The Army School of Nursing conducts a three-year course. Applicants must be

nineteen years of age, and graduates of an accredited high school.

As the Army Hospital does not specialize in certain lines, the student nurses receive additional work in obstetrics and pediatrics at the Philadelphia General Hospital; in psychiatry at St. Elizabeth's Hospital and in public health with the Visiting Nurses' Association. The graduates, in 1930, numbered forty-eight.

In addition to those described, training courses are given in dietetics, physical therapy, occupational therapy and anesthesia and laboratory technic, for graduate nurses. A course is also conducted for volunteer Red Cross hospital workers.

It is quite apparent from what has been said that the Army Medical Center is actively engaged in educational work and that, from an administrative standpoint, there must be careful planning and cooperation. For this purpose there is an Assistant Commandant in charge of schools, who supervises and coordinates all instruction and training.

The Army Medical Center is unique, both from the military and civilian standpoint. Its average daily population is well in excess of 2,000, which represents a problem in housing, messing and supply. The military strength, including patients, exceeds that of a peace-time regiment, and the utilities (heating, lighting, landscaping, plumbing, general repairs, laundry, etc.), are probably more extensive than that of any single unit in the entire Army.

The Center is inspected almost daily by Washington visitors interested in hospitalization and medical education, particularly by representatives of foreign governments. The Medical Department is justly proud of its Center and is pleased to have it classed among the interesting and instructive places to be seen in the Nation's Capitol.

Army Medical Center.

AVOCATIONS AND CULTURE

A productive avocation is the hall-mark of the cultured man. Culture argues a broad outlook on all problems, and such an outlook is particularly demanded at the present time for a wise guidance in the trend of advance, which the medical profession is just now called upon to furnish.—DR. JOHN A. HARTWELL.

Notes from Two Important Medical Meetings

Reported by GEORGE B. LAKE, M.D., Chicago

International Postgraduate Medical Assembly

MINNEAPOLIS is coming to be a popular place for holding large medical meetings. The third such occasion within little more than a year was the International Medical Assembly, which met October 20 to 24, inclusive.

As usual, this group of active and hard-working clinicians came expecting to be well repaid for the time, effort and money expended; and, as usual, they were not disappointed. The registration was in the neighborhood of 3,000. The sessions began at 7:30 A.M., and lasted, with brief intermissions, until 10 to 10:30 P.M. The program listed 121 dry clinics and addresses, practically all of which were presented, however, there were many last-minute changes in the schedules so that many who did not care to hear all of the things offered (and they are few who can digest such a massive mental banquet) were disappointed to find that the paper they especially wanted to hear had been read while they were out looking at the exhibits. Most of the speakers were kept within their time limit by the flashing of a red light on the reading desk when the period was up. On the whole, however, there was no reason why anyone should fail to get all the information he could assimilate.

The business meeting resulted in the selection of Dr. Arthur Dean Bevan, head of the department of surgery, Rush Medical College, Chicago, as president-elect, and the designation of Milwaukee, Wis., as the place for the meeting in 1931.

THE SCIENTIFIC EXHIBIT

Compared with those of the American Medical Association, the scientific exhibits

at these meetings are small in number (there were only fifteen at this meeting), but are interesting.

The presentation of serial cross-section anatomy, with roentgenograms, made by Drs. J. S. Lundy and J. D. Camp, of the Mayo Foundation, was something really new.

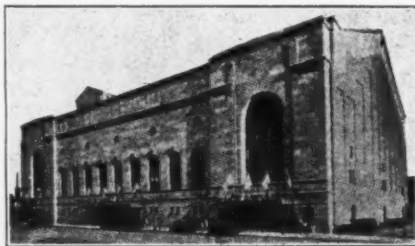
The body of a typical, normal man (he died of acute lobar pneumonia, having no other organic lesions) was frozen and cut into serial cross-sections, at about one-inch intervals. These slices were then mounted in double-glass-front holders and properly preserved, after which they were carefully photographed, to show their surfaces, and teleoroentgenograms were made with a soft tube and long exposures. These show an as-

tonishing amount of detail in the soft part, the blood vessels, and even the fibres of the muscles being clearly visible.

When these films are mounted in a viewing box, with the photograph and the corresponding roentgenogram side by side, they enable one to study anatomy in a way which has, hitherto, been impossible.

Work on this exhibit has been going on for two years, and the enthusiastic young men who have done it say that it is only a beginning. They now plan to make sagittal and antero-posterior longitudinal sections in the same way.

In the exhibit of the University of Minnesota School of Medicine, a method was shown for detecting very small pleural effusions roentgenologically, by placing the patient on the affected side and shooting through antero-posteriorly.



Municipal Auditorium, Minneapolis, where the meetings were held.



Dr. George V. I. Brown
Milwaukee, Wis.
Speaker of the Assembly



Dr. William D. Haggard
Nashville, Tenn.
President



Dr. William B. Peck
Freeport, Ill.
Managing Director

The Glen Lake Sanatorium for tuberculous patients put on a good show, including a model of the institution and a very instructive collection of series of films showing the results of the various surgical procedures—pneumothorax, phrenicectomy and thoracoplasty—which are being used more and more freely in the treatment of pulmonary tuberculosis.

The Ramsay County Medical Society has a good library, with a librarian in charge, and made an interesting exhibit of old books and magazines, in which were the original reports of many epoch-making discoveries in medicine, as well as of obsolete surgical instruments and appliances, demonstrating graphically the mechanical handicaps under which our professional forefathers labored so mightily.

THE TECHNICAL EXHIBIT

The showing of the work that is being done by those who supply physicians with the drugs, instruments, appliances and special foods which are required for the modern diagnosis and treatment of disease, is an important part of every large medical meeting. On this occasion, 102 firms were represented, and several new things were shown.

The Taylor Instrument Company has an apparatus for applying *venostasis* ("the mechanical digitalis"), neatly and effectively; also an electric skin-temperature thermometer, which will be of use chiefly to physiologists and biologists.

Johnson and Johnson have produced a brand of catgut which they call *Ethicon* and which, without any loss of tensile strength, is sufficiently pliable for easy and

efficient use just as it comes from the sterile tube, without any soaking in water.

Several new developments in connection with *digitalis* were presented, most important of which was the announcement that the Upsher Smith Co. has adopted the *International Unit* method, which practically eliminates the more or less variable *cat unit*, for standardizing all of their *digitalis* preparations.

Burroughs, Wellcome and Co. are offering a solution of the *total glucosides* of *digitalis*, free from inert matter, standardized to one *cat unit* per cc., and possessing a demonstrated *stability* of at least one year.

The Squibb people have worked out a special dropper for use with *digitalis*, which will deliver drops containing one *measured minim* of the tincture.

The Abbott Laboratories made the first public offering of their new hypnotic-anesthetic, *Nembutal* (discussed by Dr. Tabern in the November CLIN. MED AND SURG.), which excited a good deal of interest.

VARICOSE VEIN CLINIC

On several mornings during the session, at the Minneapolis General Hospital, Dr. Herman O. McPheeters, author of a textbook on the subject, held clinics in the injection treatment of varicose veins.

After trying the various solutions recommended for this purpose, he now uses *Vari-Chlor-Osc* or *Varisol* (containing 30 percent invert sugar; 10 percent sodium chloride and 1 percent benzyl carbinol, the latter for its analgesic effect), and feels that the latter, while equally or more effective than the others, produces less pain and cramping.

With quinine and urethane, only 0.5 cc. can be injected at the first treatment and only 1 cc. later, so that many treatments are required if the varicosities are at all extensive.

With Varisol, the entire system of affected veins can safely be injected at one session, using 100 cc. or more of the solution, if necessary. (At this clinic he treated a young man who had large varicose veins of his right leg, from groin to ankle, making twelve or fifteen injections, and told him he could go to work in the afternoon. No anesthetic was used, but the patient made no complaint and even talked and laughed with the nurses).

With the patient standing, mark the sites of injection with tincture of iodine or Mercurochrome solution. Then place the patient on the table and elevate the leg, to let the blood drain out. The affected veins should be as nearly empty as possible when the injection is made, in order that the strong solution may not be diluted with blood.

The spreading of the injected solution is prevented by the use of multiple, rubber-tube tourniquets, placed above and below the sites of injection; or, if the varicosities are small, by the use of an occluder, the best type of which has been devised by Dr. McPheeters and is made of a special metallic alloy, almost as pliable as rubber, so that it can be fitted exactly to the individual limb being treated. (This instrument is made and marketed by the C. F. Anderson Co., Minneapolis).

The needle used should be of 23 to 25 gage, with a short bevel; and the bevel should be on the upper side when making the injection.

When the syringe is emptied, Dr. McPheeters pushes the point of it through the opposite side of the vein, thus sealing the opening through which fluid might escape into the tissues, and removes the syringe, leaving the needle in place for ten minutes or more. When he finishes the injection of extensive varicosities, the patient's leg looks like a pincushion.

If leakage of fluid into the tissues occurs, firm pressure is made at the leaking point, with a gauze sponge, for five minutes, and then an adhesive strap is applied.

When the operation is finished, gauze sponges are placed over the injected veins and adhesive straps are applied tightly and left in place for two days.

The small, superficial varicosities, called "bursts," which are chiefly troublesome on cosmetic grounds, can be abolished by entering the needle in any of the veins and injecting Varisol slowly, when the entire cluster of bluish vessels can be seen to fade away, almost like magic.

The economic aspect of this one-session method should not be overlooked. This is a surgical operation and should be paid for on a flat-rate basis (preferably in advance), the same as any other operation. A reasonable fee is from \$50 to \$200, according to the financial status of the patient, and includes any subsequent injections which may be necessary to clear up any small varicosities which were missed at the first sitting.

ABSTRACTS OF SOME PAPERS READ AT THE SESSIONS

PREGNANCY AS A DISEASE

By William B. Hendry, M.D., University of Toronto, Faculty of Medicine, Toronto, Can.

Pregnancy is a self-limited disease of nine months' duration, terminated by the crisis of childbirth, and must be treated on this basis for the safety of the patient.

In this disease the water balance of the body and also the balance of the various minerals, especially the chlorides, are more or less profoundly disturbed and must be carefully studied and readjusted.

In the early stages the patient is nauseated and dehydrated. These conditions can often be relieved by the intravenous administration of 300 cc. of 20-percent dextrose solution, repeated as necessary.

SKIN INFECTIONS WITH HEMATOGENOUS DISSEMINATION

By Dallas B. Phemister, M.D., Prof. of Surgery, Rush Medical College, Chicago

In many cases of osteomyelitis, the portal of entry of the hematogenous infection is in the skin, from boils and other staphylococcus dermatoses, which have been incised and vigorously squeezed, "to get out all the pus." Such lesions are always a source of danger if handled roughly.

Hematogenous transmission of infectious material from skin lesions—boils, carbuncles, etc.—may also cause multiple muscle abscesses, arthritis, perirenal and renal abscesses ("kidney carbuncle"), etc.

"DYSPEPSIA"

By Irvin Abell, M.D., Clin. Prof. of Surg., Univ. of Louisville, School of Med., Ky.

"Dyspepsia" may be divided into three classes:

1.—Primary (when lesions are present in the stomach and duodenum).

2.—Secondary (when the lesion is in the biliary system or other neighboring organs).

3.—Functional (strictly non-surgical conditions).

A patient complained of trouble with his stomach lasting two weeks. The appetite was impaired and he was losing weight and had a steady, burning pain in the epigastrium; no vomiting, heartburn or back pain. The urine showed albumin, 2 plus, and a trace of sugar. Analysis of gastric contents gave: total acidity, 55; free hydrochloric acid, 30. There was occult blood in the stool. X-ray films showed an indefinite duodenal cap and a filling defect on the lesser curvature of the stomach.

Comments: As a rule, patients with primary dyspepsia give a long history of recurrent attacks; but in this case the trouble was of short duration (2 weeks).

"Hunger pain" is not pathologic, but is evidence of a normal function—peristalsis in an empty stomach. It is, however, exaggerated in gastric ulcer, the pain being, almost always, in the epigastrium; rarely below the umbilicus.

Ulcer of the lesser curvature of the stomach produces more symptoms than does one of the greater curvature.

Hemorrhage may be of three types:

1.—Constant seepage, producing secondary anemia and occult blood in the stools. To make a sound diagnosis of the latter condition, the patient must abstain from eating meat for two or three days, and bleeding from the mouth and rectum must be excluded.

2.—Paroxysmal hemorrhage, with hematemesis and (or) melena.

3.—Massive hemorrhage, with immediate danger of life. In these cases, x-ray examination is not indicated.

Hemorrhage, of itself, is never an indication for immediate operation.

In 50 percent of cases of reflex dyspepsia, no symptoms point directly to the gall-bladder. In these cases the Graham test may give help in diagnosis; but we must remember that it shows only gall-bladder function; not disease conditions. Where

definite gall-bladder symptoms are present, no Graham test is needed.

In obscure cases of dyspepsia we will need a detailed and intelligently taken history, as well as complete laboratory studies, in order to make the diagnosis.

TUBERCULOSIS OF THE KIDNEY

By Henry Wade, F.R.C.S., Univ. of Edinburgh, Scotland

When the tubercle bacillus becomes established in the body, we may expect that nature will ultimately effect a cure, as this organism has a low virulence, but high vitality.

In tuberculosis of the kidney, this takes place only when the entire organ has been destroyed, because, when the degenerated material is discharged, it goes into the kidney pelvis, with resulting new infection of other parts until nothing remains.

Tuberculosis of the kidney is *always* a secondary infection, blood-borne from a focus in some other organ.

Among the early signs are diminished bladder capacity and reddening of the ureteral orifice on the affected side.

We must do a bilateral pyelography and ureteral catheterization and estimate the condition of the sound kidney by the x-ray findings. If tubercle bacilli are found in the urines from both ureters, it does not prove that both kidneys are infected. Organisms may enter the ureter on the sound side by regurgitation from the bladder. An irregularly contracted and inflamed ureter is practically characteristic of tuberculosis.

Before doing a nephrectomy, the surgeon must insist on 18 months for convalescence, the patient reporting every three months, with weekly records of his weight.

In doing the operation, the kidney must be handled carefully and the pedicle clamped at once, so as to avoid dissemination of the infection through the blood.

THE TREATMENT OF PNEUMONIA

By Alvah H. Gordon, M.D., Assoc. Prof. of Med., McGill Univ., Montreal, Can.

The most important factor in the treatment of pneumonia is complete physical and mental rest. This means that every one not actually engaged in the care of the patient (including friends and relatives) must be kept out of the sickroom.

Fresh air should be used with judgment; not as a matter of strict routine. Oxygen is often helpful. Alcohol has little value in these cases. The dangerous effects of opium rule out its use.

The routine use of digitalis in pneumonia leads to an increased death rate in all classes of cases. If the heart fails, rapid digitalization is indicated. In collapse, the best treatment is 500 to 750 cc. of 10-percent dextrose solution, intravenously. Epinephrin and strychnine are also useful in this condition, if dextrose is not available.

Plenty of time must be allowed for convalescence (in order to prevent later complications and invalidism). Many physicians permit their pneumonia patients to get up and to return to work too soon.

PERIODIC PHYSICAL EXAMINATIONS

By Harlow H. Brooks, M.D., Prof. Clin. Med., Univ. and Bellevue Hosp. Med. Coll., New York City

Periodic physical examinations should be made by the family physician, even though he may not be so expert as a specialist in detecting the rare conditions, because the most essential point in such examinations is an intimate knowledge of the patient and his circumstances.

Many general practitioners seem unwilling to undertake this work, saying that they want to devote their entire time and skill to the care of the sick. This is unsound reasoning, because periodic examinations will increase their skill, develop their diagnostic ability and enable them to detect many cases of incipient illness, where their therapeutic efforts will be best rewarded. These men must be taught to take a personal, as well as a scientific, interest in their patients.

It is imperative that these examinations be made in a routine way, so as to save time and miss nothing important. The record of the examination must be made *at the time*, on a standardized blank, which permits ready comparison with subsequent examinations. The patient should receive a carbon copy; but the physician should elaborate his retained copy at his leisure, with notes of the patient's mental and sexual life and other personal matters which have no proper place on the patient's copy of the record. The physician's copy is also the place to record important incidents which have occurred in the patient's life between examinations.

In making these studies, use more brains than instruments. Urine, blood and rectal examinations should be routine. Do not enter normal findings on the blank.

The investigation of the patient's mental and emotional life is very important, and the physician must gain the patient's confidence if he is to do this adequately. Mental diseases can be cured if recognized and treated early, and the experienced practitioner actually knows more about these matters than he thinks he does. Do not enter the results of such studies on the patient's copy of the record.

Every periodic examination should conclude with definite suggestions to the patient, based upon the findings. In order to make these of the highest value, the physician must know the emotional, economic, domestic and temperamental status of the patient.

Such examinations are of the utmost value, to both patient and physician, as they establish a bond of contact between them.

CLEFT PALATE

By George Grey Turner, M.B., M.R.C.S., L.R.C.P. (Lond.), Lecturer in Surgery, Durham University, Newcastle-on-Tyne, Eng.

In cases of cleft palate, we must resist the temptation to operate at once, and wait until the child is in good condition (usually at about 3 months). Meantime we must encourage the mother with assurances of the curability of the condition.

In operating, do not remove the premaxilla. Repair the lip first, and make it long enough; that will help in the closure of the anterior part of the cleft.

If the cleft is limited to the soft parts, repair it within 12 months, if the child is in good condition. But even early and accurate anatomical repair does not assure normal speech, which must be painstakingly learned away from home. Do not belittle the importance of these cases, nor be too sanguine in prognosis.

These patients should be operated upon under a general anesthetic and handled as out-patients, giving the mother careful instructions and having the child brought back at short intervals for observation. The food should always be liquid, always boiled, and always followed by a drink of boiled water. No mouth washes or sprays should be used.

The two chief rules as to the time of operation, in cases of complete cleft palate are:

- 1.—The patient must be in good general

health, even if we have to wait until the age of three, four or five years. Even young adults can be much improved by surgery.

2.—The surgeon must approach the operation in the best possible condition or not at all, as it is frequently very trying.

PREMATURE LABOR IN CONTRACTED PELVIS

By A. H. M. J. Van Rooy, M.D., Prof. of Obst. and Gyn., University of Amsterdam, Holland

In women with moderate general contraction of the pelvis, premature induction of labor is much superior to cesarean section, the high forceps operation or version and extraction, but the cases must be carefully studied. The pelvis must be large enough to permit the passage of a fetus of viable age and size; labor must be induced at exactly the right moment; and the premature infant must be expertly cared for in a separate ward of the hospital.

In primiparae, where the pelvis shows a true conjugate of more than 7 cm., the labor is allowed to come to term, in order to test the forces of nature.

Never induce labor before the twenty-eighth week. After that, test twice a week by pressing the head into the inlet of the pelvis, using the hands through the abdominal wall. *At the moment the head ceases to enter the pelvis, labor should be induced by rupturing the membranes and any other standard methods which may be necessary.* Prolapse of the cord can be prevented by keeping the mother on her side continuously, after the membranes are ruptured.

If the infant is asphyxiated, it may often be revived by the **subcutaneous injection of oxygen**, using a rubber bag holding 40 cc., with a small rubber tube and a fine hypodermic needle, inserted about 5 cm. above the location of McBurney's point, on both sides.

This same method is helpful in breech deliveries, where the after-coming head is delayed, and also in cases of pulmonary atelectasis, when 1,000 cc. or more may be injected. We have also tried these injections before ether anesthesia, using 500 cc., and no excitement stage was observed.

True obstetric thinking is decadent, now that surgery has usurped so large a place in our practice; but it is true now, as it has always been, that Nature is the best obstetrician.

THE TREATMENT OF ESSENTIAL HYPERTENSION

By Elsworth S. Smith, M.D., Prof. of Clin. Med., Washington Univ., St. Louis, Mo.

Rational therapy can be applied only on the hypothesis that vascular spasm is primary in hypertension.

We must remove all foci of infection. The diet must contain only enough protein to meet metabolic requirements (meat 3 or 4 times a week—eggs on other days); fruits and vegetables are given freely; salt only as used in cooking—no more; water as desired, except when dropsy is present; tea and coffee may be used in moderation, but not at night.

The patient should spend eight hours in bed every night and should lie down for an hour or two during the day. Sedatives are invaluable in reducing nervous tension—Pantopon, 1/3 grain (20 mgm.); phenobarbital; bromides, as indicated.

Of the vasodilators, **bismuth subnitrate**, 5 to 10 grains (0.325 to 0.650 Gm.), in capsules, three times a day, is most satisfactory, because the action is mild and continuous. This dosage should be continued for two months, and then gradually reduced. The more powerful and rapidly acting vasodilators should be used only in emergencies.

When the heart fails and dropsy develops, Salyrgan will remove it. Begin with 0.5 cc. and, if tolerated, increase gradually to 2 cc., giving the injections intravenously, from one to three times a week.

In the presclerotic stage, much can be done to postpone a disastrous outcome, by treating the mental and emotional, as well as the physical, factors.

THYROIDECTOMY IN HYPERTHYROIDISM

By Chas. A. Elliott, M.D., Prof. of Med., Northwestern Univ., Chicago

Never subject a patient to thyroidectomy unless the diagnosis of hyperthyroidism is established beyond a doubt.

The symptoms of hyperthyroidism may persist after operation, even though the basal metabolic rate returns to normal; or the B. M. R. may remain high after operation.

Thyroidectomy is not a sure cure for hyperthyroidism, though it is reasonably safe and sure, if diagnosis and operation are early.

AMERICAN ACADEMY OF OPHTHALMOLOGY AND OTOLARNGOLOGY

The head surgeons have an organization, membership in which is limited to those who pass a rigid examination to determine their qualifications to practice their specialties, and the thirty-fifth annual meeting of the American Academy of Ophthalmology and Otolaryngology, which was held in Chicago, October 27 to 31, inclusive, brought out over 1,000 exceptionally high-class men.

The technical exhibit consisted principally of elaborate and varied instruments for the highly-specialized operations in these fields. One interesting showing was the multiple ophthalmoscope, for teaching purposes, whereby eight students can view the same phantom eye at the same time with the demonstrator and follow his descriptions readily. This was shown by Carl Zeiss. Belgard-Spero, Inc., Chicago, demonstrated a new type of spectacle lens, which does away with the prism effect which is such an unpleasant feature of strong concave lenses.

The pharmaceutical houses do not take much part in these exhibits, but Hynson, Westcott and Dunning distributed a new throat medication, called Thantis Lozenges, which consists of the antiseptic dye, Merodicein, with the mild local anesthetic, Saligenin.

One interesting feature of the meeting was the fact that the first two rows of chairs in the lecture hall were reserved for the essayists and those who purposed to discuss the papers, thus saving much confusion.

Only a few of the valuable (but rather "high brow") papers read can be abstracted here, for lack of space.

NASAL SINUS DISEASE AND THE EYE

By Sanford R. Gifford, M.D., Chicago

Not all cases of retrobulbar optic neuritis result from sinus infections; in fact, these are etiologic in relatively few cases. Brain tumor is an important cause. In 20

percent of cases the cause is unknown. All material removed at operation should be carefully studied by a pathologist.

Operation in these cases should, if possible, be postponed for one week, to give time for a careful study of the sinuses.

During this week, much good may be accomplished by using a spray of 3-percent ephedrine solution in the nose every 3 hours; by sweats; and by foreign protein injections.

Operations may do good, if done before actual atrophy of the optic disc has taken place.

NON-SPECIFIC PROBLEM

THERAPY

By J. C. Beck, M.D., Chicago

When giving non-specific protein injections in otolaryngologic practice, we must remember the positive and negative phases of the reaction, and not make a second injection during the negative phase.

The negative phase comes first and is characterized by a rise in temperature, basal metabolic rate, blood-sugar and leukocytes, with an increase in myelocytes and stimulation of the sympathetic nervous system.

The positive phase shows a fall in the first four factors, a preponderance of lymphocytes and a stimulation of the parasympathetic system.

In giving these injections we should always have a syringe of epinephrin solution at hand, to combat possible anaphylactic reactions.

Many other therapeutic measures, such as specific serums and vaccines, endocrine products, physical agents and chemicals, also produce non-specific effects. We must use laboratory control when employing these substances.

Remembering that the effects of these injections are a stimulation of the biologic forces of resistance, we must not expect effects in patients who have lost the power of responding to stimuli.



DR. WILLIAM H. WILDER
Chicago, President of the
Academy.

Colonic Therapy

By H. W. ROTHMAN, M.D., New York City

COILED within the abdomen lies what is causing more discomfort to the human race today than any other organ in the body; namely, the intestine. More and more are we turning our attention to this area of sadly neglected ailments. This paper deals, primarily, with the terminal portion of the extensive digestive tract—the colon.

Health and wellbeing depend absolutely upon proper elimination of toxic material, and one can readily understand how, with impaired colonic function, this feeling of wellbeing can be slowly but surely undermined. What matters it if we chew our food thoroughly, if our digestive enzymes are secreted and in proper quantities, if we absorb the life-giving elements of food; when, at the end of the cycle of digestion, we are unable to eject the materials rejected by the body as unfit for absorption?

The colon has long been regarded as a cesspool for refuse, with no other function than to receive these waste products and, at its leisure, evacuate them. *The process of digestion does not end at the ileo-cecal valve.* With this thought in mind, the colon takes on an added importance.

FUNCTIONS OF THE COLON

Physiologically, the colon performs two functions; absorptive and motor, the splenic flexure of the colon acting as the point where it takes on its motor function.

Material that passes into the colon through the ileo-cecal valve is in a liquid state, and consists of a certain amount of unabsorbed food material, together with digestive enzymes received in the upper portion of the small intestine. The large intestine, while its secretions contain much mucus and are alkaline in reaction, is not characterized by the presence of digestive enzymes. The movement of the colon content is slower than is that of the small intestine, and digestion and absorption continue, as in the small bowel. In the colon, where there is great absorption of water, which is not compensated for by a secretion, as in the small intestine, the material, before it reaches the descending colon, has acquired the consistency of feces. This absorption is facilitated by the movements peculiar to the cecum and ascending colon;

namely peristalsis and anti-peristalsis, the latter being the more frequent. We can readily see the value of this reversed intestinal movement, as it delays the passage of material toward the rectum, giving increased opportunity for the completion of digestion and absorption. In the descending colon the movement is peristaltic and the material is slowly carried toward the rectum, with very little if any, absorption.¹

About one-fifth of a dried stool is composed of bacteria, and in conditions of disease this proportion may amount to one-third or even more. Of these bacteria, from 80 to 90 percent are dead. *Bacillus coli* predominates and, among others, may be found *B. welchii*, streptococci, staphylococci, enterococci, etc. The presence of a large number of hemolytic streptococci is very significant, as is the presence of a large number of staphylococci.

These so-called "harmless" intestinal bacteria can become very demons of destruction at times. Adami suggested that a number of chronic diseases have their origin in a continuous, mild infection with *B. coli*, and brought forth evidence to show that such affections as anemia and cirrhosis of the liver may be due to such an infection. Metchnikoff actually induced the lesions of cirrhosis and arteriosclerosis by administering the products of the growth of *B. coli*, which also has been found to be the activating agent in peritonitis, appendicitis, salpingitis and other intra-abdominal infections. Cystitis, urethritis and prostatitis are very often caused by *B. coli*; and Braithwaite² has shown, by a series of interesting experiments, that this organism, by way of the lymphatics, can cause duodenal or gastric ulcer and cholecystitis. Surgeons very often, during operation, see co-existing cases of acute appendicitis and acute cholecystitis.

FOCAL INFECTION

Teeth, tonsils, appendixes and gall-bladders have long been the areas examined for focal infections, and very often have been found to be the offenders. But just as frequently have teeth been extracted and tonsils removed, with the result that the patient has derived no benefit and still has his arthritis or his rheumatism.

The focus which is most easily accessible,

and is most frequently overlooked, is the intestine, yet we know that about 20 percent of the contents of the lower bowel is composed of bacteria, which may become virulent. Sir Arbuthnot Lane recognized this important fact, but he went to the extreme of removing this focus by extirpating the colon, the rashness of which procedure was very soon realized. I have seen cases of chronic cystitis, which have resisted routine treatment for several years, clear up when the intestinal focus was removed.

Indications of local disorder in the colon are shown, not only by the bacteriologic examination of the fecal smear, which is a routine procedure in colonic therapy, but also by chemical examination. Cecal contents, which normally are only slightly acid, are sometimes markedly acid or alkaline; and yet putrefactive products may be present in either case. Extremely severe cases of autointoxication frequently show a great acidity of the cecal content, due in part to the accumulation of hydrogen sulphide, in itself a toxic substance. On the other hand, excessive alkalinity may result from a putrefactive residuum, due to the liberation of ammoniacal bases.*

Chronic *intestinal stasis* is a term employed by Lane to designate such a delay in the passage of material along the gastrointestinal tract as to permit the absorption of so much toxin that the body cannot successfully deal with it.* Defective colonic drainage permits absorption of these toxins and is responsible for illness and the lowering of vital resistance to various bacteria. Lane and his followers are of the opinion that toxemia so induced may cause chronic mastitis, rheumatoid arthritis, gastric and duodenal ulcer and appendicitis and, by lowering resistance, may be responsible for progressive tuberculous disease.

To quote Schellberg, "Lack of adequate and complete intestinal drainage is undoubtedly responsible for a very large proportion of human ills. The intestine must be emptied of accumulated residue, the injured mucosa cleaned and treated so that it may be restored to full functional activity, and the energy of the cells thereafter promoted, so that there will be no chance for stasis to recur. Any therapy which fails to accomplish these three ends should be discarded as inadequate and harmful."

COLON IRRIGATION

As an adjunct to other measures, I have had extremely gratifying results in the res-

toration of colonic function by means of colonic irrigations. The apparatus most suitable for this procedure is the one designed by O. B. Schellberg, which, by means of a multi-way valve, permits local dilatation of any portion of the colon, with a quick release of the fluid instilled. In stasis, peristalsis is mechanically stimulated by the inflowing solution, the distention of the intestinal wall and the presence of the tube in the colon. Local disorders, likewise, are improved by this method of treatment. Medication by mouth, intended for the lower bowel, undergoes various changes and, by the time it reaches the colon, is often ineffective. With this apparatus we can introduce, directly into the lower bowel, antiseptic medication and antagonistic bacteria. For this purpose the lactic acid-forming bacteria are available.*

The object of introducing lactic acid-forming bacteria is to inhibit the objectionable activity of other organisms and to form lactic acid and other products associated with their development, all of which act beneficially. *Bacillus acidophilus*, that most frequently used, is a non-motile, non-pathogenic bacillus found in the feces of breast-fed children and in human milk. This organism is strongly anti-putrefactive and suitable for intestinal colonization. I have found that the direct method of implantation of this bacillus in the colon has been more effectual than the oral route. An intestine that has been previously prepared with an antiseptic solution affords a better medium for the growth of *B. acidophilus* than does one swarming with *B. coli* or streptococci.

Colonic irrigations have often been brought into disrepute by charges that they cause injury to the intestinal mucosa; that they cause anemia; that they can produce shock; or even that the intestine may be perforated by the tube.

In a series of over 100 cases where I estimated the hemoglobin of the blood, before and after a series of irrigations, I did not find any appreciable drop. Schellberg, having personally irrigated at least 100,000 patients, never had the experience of perforating the gut: and in my own experience with nearly 5,000 cases I have never seen a case of either perforation or shock. I am of the firm conviction, however, that, in the hands of the unskilled or with inadequate apparatus, it is possible to cause injury to the mucosa of the colon.



Portable Apparatus for Colonic Irrigation.

The purpose of colonic irrigation is, not to flood the colon, but to dilate a small portion of the colon locally, advance the tube gently, and then release the fluid injected. So, with a minimum amount of trauma and fluid, we can gradually penetrate the entire length of the colon, by short, successive advances. This gradual insinuation of the colon tube, upon a flexible, reversible stream of fluid, makes it possible to irrigate the colon without injury to the delicate mucosal lining.

Unskilled or ignorant operators have a tendency to force large amounts of fluid into the colon, with resulting distention and pain. It is not necessary to use large amounts and not more than 4 to 6 ounces

should be allowed to enter at once, during the passage of the tube toward the cecum. By releasing the fluid at this time, we irrigate successive small areas, without forcing toxic material back to the absorptive area of the colon; namely, on the right side. Once the tube is in the ascending colon or the cecum, we allow our medication to flow into the colon, filling it from right to left, at the same time withdrawing the tube slowly. Thus one can see that, for the safe and successful application of colonic therapy, a comprehension of the anatomy and physiology of the colon is essential. The proper technic in colonic therapy, as in any other procedure, is acquired only by actual experience.

The advantages of this type of colonic irrigation over the ordinary enema are that, with the enema, toxic material which is ready for evacuation is forced back into the colon, to be reabsorbed with all its ill effects; with the cecal tube we can apply medication to any part of the colon, and can implant, directly in the cecum, the lactic acid-forming bacteria; with the multi-way valve we have direct control over fluid in any part of the colon and can readily release it, while with the enema we must wait for peristaltic action to empty the colon of its contents; and, finally, with this method the patient obtains immediate and lasting benefit.

There is a vast and fertile field for investigation in the colon. Combined with other therapeutic measures at our command, colonic therapy will unquestionably prove to be one of the greatest aids in medicine.

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- 20 East 57th St.

Meningococcus Meningitis Following Head Injuries*

A Report of Two Cases

By A. M. TORRANCE, M.D, Pittsburgh, Pa.

THE recognition of epidemic meningitis as a clinical entity was comparatively late. The first cases to be reported are two by Vieusseaux, during an epidemic in 1805. The following year, five cases were reported at Medfield, Massachusetts. About the same time cases were reported in the Prussian army and in England. Since that time the disease has occurred sporadically and in epidemics. The majority of cases have been observed during the first five months of the year.

SYMPTOMS

The onset is sudden, usually with headache, drowsiness, moderate fever, initial chills and vomiting. Occasionally there are premonitory symptoms such as, backache, malaise and loss of appetite. A spasticity of the muscles is soon noticed, particularly of the muscles of the neck. The temperature is variable. It may reach 106° F. or may be normal. It is usually higher in young children. The pulse may be relatively slow, as compared with the temperature. Herpes about the lips is frequently found and, in the majority of cases, a dusky mottling is observed over the body, from which the disease received the name "spotted fever."

The nervous manifestations are, however, by far the most conspicuous. Drowsiness may be replaced by active delirium. There is seldom paralysis of the trunk muscles; although paralysis of the muscles of the eye is not uncommon. The pupils are usually dilated, due to sympathetic stimulation, but may be contracted, as a result of increased intracranial pressure. Hyperesthesia, particularly along the spine, irritability and general restlessness are practically constant at the outset. The positive signs of meningeal irritation first recognized, however, are Kernig's and Brudzinski's signs, which are too well known to require description. The tendon reflexes are gen-

erally exaggerated, except in fulminating cases, where they may be found abolished.

The leukocyte count varies from 15,000 to 40,000. Blood cultures have been found positive for the meningococcus in a few cases.

DIAGNOSIS AND PROGNOSIS

Diagnosis should be confirmed by spinal puncture. In positive cases, the cell count is greatly increased. The differential count shows these cells to be practically all polymorphonuclear leukocytes. The sugar content of the spinal fluid is decreased. (Why should it not be, since the meningococcus ferments glucose?). Globulin appears in increased amounts. The fluid is turbid and may be so thick as to resemble pus. The pressure is always increased and the fluid may actually spurt from the needle when the stilette is withdrawn. By direct smear, the organism can usually be identified as small, gram-negative, biscuit-shaped diplococci. We have found them to grow readily on glucose broth, if 2 to 3 cc. of the suspected fluid is transferred. Richmond claims that the organism may be recovered in the spinal fluid before inflammatory reaction begins.

The prognosis is greatly influenced by serum treatment. The mortality rate, without treatment, is about 75 percent. At the present time, with treatment, it is estimated to be around 30 percent. *The earlier the serum is given, the better the outlook.* In infants with convulsions, the death rate is high. This may possibly be due to the fact that the diagnosis in these cases is usually made later. In old people, the mortality may reach 100 percent.

Normally, there are about two to four percent of carriers. When the incidence reaches 20 percent, cases of the disease appear.

Meningitis following head injuries is usually considered to be due to infection by the staphylococcus, streptococcus or pneumococcus. When the injury occurs in a

*From the department of laboratories, Southside Hospital.

carrier or in one exposed to infection by the presence of a carrier, the meningococcus may be the infecting organism. Generally it is held, however, that head injuries play a minor part in the etiology, and a careful review of the literature reveals few cases occurring in this way.

In 1923, Richey and Helmbold made an admirable survey of the literature and added one case of their own. The condition, however, must be either very rare or not recognized, as there are less than a dozen cases on record. Two cases of this type, which occurred within a comparatively short time, may therefore call attention to this possibility.

CASE REPORTS

Case No. 1: Donald G.; a white boy; four years of age; born in Pennsylvania, was struck by an automobile on April 6, 1929. One hour later he was admitted to the Southside Hospital in an unconscious condition. He had an abrasion on the forehead and bleeding from the nose and mouth. The tendon reflexes were inactive. The temperature was 97.2° F.; pulse 84; respiration 20. Roentgen-ray examination of the skull revealed a fracture, approximately 1 inch in length, in the right frontal area, with apparently no bony depression. Three hours after admission he vomited six ounces of dark-red blood.

Consciousness gradually returned and with it a rising temperature, which reached 104.2° F. on the third day after the accident, at which time stiffness of the neck was noticed. The tendon reflexes were hyperactive. There is no record of other clinical evidence of cerebral irritation, but it was deemed justifiable to examine the spinal fluid.

By lumbar puncture, 25 cc. of turbid spinal fluid was obtained, under increased pressure. Globulin was 2 plus. There was no sugar and no organisms were seen in a smear of the sediment, stained by Gram's method. The cell count was 670 polymorphonuclear leukocytes per c.mm. No blood cultures were taken and there was no growth of the spinal fluid culture for the first twenty-four hours.

On account of the high cell count and the absence of sugar, the possibility of meningococcal meningitis was considered and 15 cc. of polyvalent antimeningococcal serum were given intraspinally, with 15 cc. intravenously. The following day the temperature had dropped to 102° F. and the cell count to 113. The other findings of the spinal fluid were similar to those of the previous day. The serum treatment was repeated. On the third day, although the cell count was 955 polymorphonuclear leukocytes, the general condition had gradually improved.

From the first culture on glucose broth we obtained Gram-negative diplococci which would not grow on plain agar. On blood agar, the colonies were round, with gray opaque centers, gradually becoming lighter at the periphery. No agglutination reactions were carried out. The fourth examination showed 160 polymorphonu-

clear leukocytes per c.mm. and a slight amount of sugar.

On account of the contagious nature of the disease, the patient was removed to his home, where he received three additional intraspinal injections of antimeningococcal serum. His recovery was rapid and uneventful. Two months later he was still enjoying good health.

Case No. 2: Stanley M., a white boy of five years, was struck on the left temple with a golf club on March 31, 1929. He continued to play, but five hours later became nauseated and vomited. The following evening he complained of headache and the vomiting persisted. Two days later he was admitted to this hospital with a discharging wound over the left temple and stiffness of the neck. He was irritable. The tendon reflexes were active. No spots were found on the surface of the body. A roentgenogram of the skull showed no fracture. The temperature on admission was 102° F.; pulse 80; and respiration 20.

Spinal fluid examination on the day of admission showed a turbid fluid under increased pressure; globulin 2 plus; no sugar; cell count, 534 polymorphonuclear leukocytes per c.mm. We were unable to find any bacteria in smears from the sediment stained by Gram's method. Culture of the spinal fluid in glucose broth and blood agar showed no growth, although 2 to 3 cc. of the spinal fluid were used in each case.

Thirty (30) cc. of polyvalent antimeningococcal serum was given intraspinally. The following day the temperature was 100° F.; pulse 88; respiration 22. The spinal fluid was still turbid; globulin 2 plus; a slight amount of sugar; and the cell count 78 polymorphonuclear leukocytes per c.mm.

The treatment of the previous day was repeated. Twenty-four hours later the temperature was 99° F.; pulse 72; and respiration 24. Shortly after this the temperature reached normal and remained so, even after additional treatments. Three days later he was discharged from the hospital and has remained well ever since.

COMMENT

Case No. 1 was undoubtedly one of "epidemic" spinal meningitis. The route of infection was probably through a fracture communicating with the naso-pharynx. It has long been known that the meningococcus may inhabit the recesses of the healthy nose and pharynx. To this we attribute the sporadic outbreaks of the disease. That the traumatism gave these organisms an opportunity for establishing themselves on the meninges, seems logical. The beneficial effects of polyvalent antimeningococcal serum, given intraspinally, the high polymorphonuclear leukocyte cell count and the absence of sugar, all suggest meningococcal infection.

Case No. 2, although the organism was never demonstrated by smear nor re-

covered by culture, we feel reasonably sure that this also was one of meningococcic meningitis.

Stitt ascribes the occasional failure in finding the organisms to the fact that they are subject to autolysis. This fact is also stated by Hiss and Zinsser, from whose text I quote the following:

"It is important to remember that, because of the extensive autolysis of meningococci in the fluid, it may, under circumstances, be very difficult to find meningococci. In such cases, if prolonged search has failed to reveal organisms, our experience has taught us to assume that purulent fluid from a case of acute meningitis, in which there are a preponderance of polymorphonuclear leukocytes without organisms, is probably 'meningococcus' in origin. Streptococcus and pneumococcus fluids invariably show Gram-positive cocci."

The spectacular improvement following the administration of antimeningococcic serum certainly justifies its use.

In meningismus, although the clinical signs may simulate meningitis, the high cell counts, such as we encountered, are not found. It is usually associated with an acute infectious disease.

It is interesting to note that there were no anaphylactic reactions following repeated injections.

SUMMARY

Two cases of head injury developed signs of meningeal irritation. Examination of the spinal fluid revealed a high polymorphonuclear leukocyte count and in one case the meningococcus was recovered. They were treated with polyvalent antimeningococcic serum. Both recovered.

I wish to acknowledge my indebtedness to Dr. M. A. Bradford for the clinical records.

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6744 Penn Avenue.

THE "NATURAL" DOCTOR

There is no such thing as a "natural" doctor. Everyone who will apply himself or herself to practice with average industry, adhere to the principles taught and observe the moral and legal obligations of the community, is practically guaranteed a comfortable living for the future. Should he exhibit more than average industry, intelligence and astuteness . . . he may acquire financial independence or even moderate wealth.

The possession of the general attitudes and characteristics that make for success in any business, with a fair degree of the special qualifications mentioned, will make equally for success in medical practice. This I say, not to discourage any who may have thought of themselves as naturally inclined to be physicians, but rather to comfort the majority, who have failed to feel any special election or "call" to medical practice.—DR. J. H. J. UPHAM, Columbus, O., in J.A.M.A Aug 16, 1930

PHYSICAL WEALTH

The people of the world are tired out, physically. They have reached the limit of their physical capacity to withstand the present racket in the form of speed, competition and buying powers. "Accumulate physical wealth" should be the aim, motto and goal of every banker, manufacturer, merchant and housewife. During the next few years, the physicians can do more than the statisticians toward bringing back prosperity.

—ROGER W. BABSON.

PHYSICAL THERAPY AND RADIOLOGY

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DISTRIBUTION, DEVELOPMENT AND PROPHYLAXIS OF CANCER

IN A SURVEY of 19,129 patients with neoplastic diseases, admitted to the Memorial Hospital, New York, from Jan. 1, 1917 to Jan. 1, 1929, Pack and LeFevre found that 16,565 were malignant; of these, 8,007 occurred in males and 8,558 in females. About 30 percent of the females had cancer of the breast, and about 32 percent had cancer of the genital canal, in comparison to 7.7 percent in the males. About 43 percent of males had cancer of the oral cavity and adjoining organs, against about 6.4 percent in females; about 14.5 percent of the males had cancers of the gastro-intestinal tract, against about 6.5 percent of the females. A summary in tabulated form would read:

	Male	Female
Breast		30.0
Genital organs	7.7	32.0
G. I. tract	14.5	6.5
Oral cavity	43.0	6.4
	65.2	74.9

Hence, cancers of the genital organs, the gastro-intestinal tract and the oral cavity amounted to about 65 percent of all cancers occurring in males, and to about 75 percent of all cancers seen in females.

Pearl, in reviewing the autopsy material at the Johns Hopkins Hospital, collected, in the first 7,500 autopsies, 816 cases of cancers. Of these 610, or 74.14 percent, were carcinomas and 206, or 25.26 percent, were sarcomas or some other form of malignant tumor not sarcomatous. In white persons, 648 and in negroes 168 cancers were found. The distribution in the various systems were:

	Male		Female	
	White	Negro	White	Negro
Digestive tract	50.24	64.04	33.33	22.78
Reproductive organs	8.94	8.99	44.87	63.29
Excretory system	10.63	5.62	2.14	3.80
Total	69.81	78.65	80.34	89.87

From these observations the statement may be made that about two-thirds of cancers in females occur in the digestive and genito-urinary tracts. In the male, the digestive tract cancers predominate, amounting to about 58 percent; and in the female the reproductive canal cancers predominate, amounting to about 62 percent. It is obvious that malignant tumors have their

primary location most frequently in the digestive tract in males and most frequently in the reproductive system in females. If malignant disease of these organs could be prevented, cancer would retire at once to a relatively unimportant place among the causes of death.

It is generally conceded that cancer never starts in healthy tissue or organs. A spontaneous cancer, occurring in apparently normal healthy tissue, is really an exception. However, an exception does not prove a rule. One may further infer that infection forms the most frequent cause of chronic tissue changes.

Infection of every type and in every location is but a battle between the body and the invading organism. A victory of the host, which is spoken of as recovery, may leave a residue in the form of permanent pathologic changes. This is spoken of as an incomplete recovery. The damaged tissues are replaced by physiologically, biologically and morphologically inferior tissues.

The degree and the character of an incomplete cure depend on the residual rests of the pathologic changes in the inflammation, which may be either alterative, exudative or proliferative. The dominance of the alterative process of an infection results in deranged function; the dominance of the exudative or infiltrative process is accompanied by a stormy course of the infection; while the dominance of the proliferative processes will lead to a protracted, lingering course of the disease.

The end results, therefore, are: (1) permanent changes in the specific functional tissue and cells; (2) infiltrative and exudative processes; and (3) persistent inflammatory tumefaction. Chronic irritation and trauma and a constitutional lowered resistance will predispose to an infection and, if persistent, may terminate silently and imperceptibly in a chronic infection. The persistence of such chronic inflammatory areas, after proper and accepted treatment,

may be a bad omen and should lead to an excision, and not incision, of the suspected spot or nodule and a microscopic examination, to rule out or rule in carcinoma.

Such areas of chronic inflammation can be discovered only by periodic health examinations. Such health surveys should include the careful notation of all visible nodules, wens, moles and chronic tissue changes of the entire body surface and such canals as are accessible to the eye or can be explored with the finger, recording their physical properties, as location, size, mobility, consistency, color and time of onset.

A history of long existence, stationary character and normal mobility are properties of benign growths and inflammatory tumefactions. A history of recent onset, progressive growth, impeded mobility, ulceration, induration and dissemination are always indicative of active and possibly malignant growths. Such growths should be excised and subjected to frozen section examination, to determine the histologic nature. If one waits until a clinical diagnosis can be made, the tumor has then become disseminated and a fatal outcome will be registered, due to an inexcusable procrastination.

Should a patient apply with definite symptoms of functional or organic disturbances of an internal, hence inaccessible, organ, then all the facilities of modern diagnostic laboratory methods must be used to render a positive diagnosis. These should include x-ray examinations with opaque media, to visualize the brain, the sinuses, the chest organs, the gastro-intestinal canal, the genito-urinary tract and the osseous systems. Should laboratory and clinical diagnosis fail and malignant disease be strongly suspected, exploratory operations may become justifiable. Such decisions, of course, should be rendered only after careful consideration by a staff of consultants specially trained in the diagnosis of cancer.

H. S.

Physical Therapy Problems

Many physicians who are using or who desire to use physical therapy or radiation therapy or both in their practices are meeting or anticipating technical or clinical problems, in which they would be glad to receive assistance.

The contributors to this department are giving us the kind of practical articles which will aid in solving many problems; but sometimes a personal difficulty is not met adequately in that way.

When such conditions arise, the editor

of CLINICAL MEDICINE AND SURGERY and the Associate Editors of this Department will be glad to help any individual physician by answering his specific questions, and we invite our readers to call upon us for this service when need arises.

If the question and answer are of general interest, we will publish them in this Department; if not the answer will be sent directly to the man who wants the help, if he will inclose a self-addressed, stamped envelope for the reply.

G. B. L.

The Vasomotor Effects of Hydrotherapy

(Their Therapeutic Use)

By G. K. ABBOTT, M.D., Glendale, Calif.

THE GROWING use of other forms of physical therapy, to the neglect of hydrotherapy, is a striking comment upon our failure to understand so facile and widely applicable an agent.

The nature of pathologic physiology and the methods correcting disordered function are often so subtle that only careful analysis, based upon wide experience, will enable one to secure a desired result. My own personal experience as a teacher leads me to the very dogmatic view that a physician must learn hydrotherapy in precisely the same way that a nurse does so. *He must give treatments to sick people and watch the effects and, with this as a background, he may then be taught the principles of the subtle effects desired in a given state of disordered function.*

The situation with hydrotherapy is far more complicated than is the case with diathermy, in pneumonia for example. Here we have only the matter of the dosage, as gaged by the size of the electrode, the current and the time. It is a more stereotyped application than hydrotherapy can be. The latter is also far more complicated than is the use of ultraviolet rays, say in a skin lesion, which treatment requires only a given distance, intensity and time.

In order to make a discussion of principles most practical, I have chosen the vascular or vasomotor effects of hydrotherapy as being undoubtedly most important for successful therapeutic application. In order to make the matter as simple and brief as possible, I have chosen only three conditions to illustrate these vasomotor effects. But in these three and in the effects that must be secured, there are differences so slight, and yet so fundamentally important, that failure to understand them means the failure of the hydrotherapy used. These three diseases are; the cardiac decompensation of mitral disease without arrhythmia, toxic goiter and pneumonia of the influenzal type.

CARDIAC DECOMPENSATION WITHOUT ARRHYTHMIA

There are two objectives in treating the decompensation of mitral disease. One is restoring heart muscle tone, the other the stimulation of vasomotor activity. *And the vasomotor activity is the more important of the two.* The stimulation of the peripheral or vascular heart means the relief of the central heart. The success of the Nauheim bath is based upon this fundamental consideration, but nearly all other

hydrotherapy has the same objective. The failure to appreciate this element is the reason for the ill-advised or ineffectual use of digitalis, where there is cardiac decompensation without arrhythmia. In these cases there is a vascular relaxation; that is, dilated blood vessels, but with inactivity.

The vigorous action of the *peripheral heart*,—arterioles, capillaries and venules; sometimes also called the *skin heart*—is the effect to be secured. This is an activity much like vigorous peristalsis. It is enhanced amplitude and rate of vascular contraction and dilatation—a true *pumping action*. This increased amplitude of vascular activity must tend toward a smaller blood vessel calibre and the preservation of tone. This may be secured best by the application of *cold with friction*—ideally, the cold mitten friction. The feet especially and the body generally, must be kept warm, so as to promote reaction, but the use of any but a modicum or even minimum of heat will entirely destroy the vascular tone and activity desired. A sweating treatment; i. e., hot foot-bath and cold and very harmful, as it produces peripheral vasodilatation. Even a hot foot-bath and fomentations over the engorged liver may be too much heat and so destroy the effect of the vasomotor tonic of the cold mitten friction. One or two briefly applied fomentations over the congested liver may be used, rarely three, and often even two is too much heat and provokes loss of vascular tone.

The treatment to be used is a hot foot-bath, with an ice bag to the heart and a cold mitten friction, given as a combined treatment; i. e. hot foot-bath and cold friction simultaneously. I have seen this treatment in one or two applications, produce a most marvelous recovery of compensation, where digitalis and faultily designed hydrotherapy only made the situation worse.

The Nauheim bath secures the enhancing of vascular activity by the cutaneous stimulation of the dissolved salines and carbon dioxide. The maintaining of tone, tending to a vasoconstriction or lessened vascular calibre, is increased by the cooler water, for a Nauheim bath is to be given with *cool water*—not hot water nor even that of a neutral temperature—as soon as the first bath or two have been passed in a series.

Other forms of hydrotherapy, as the salt glow, obtain similar results, always remembering the use of cool or cold water and

avoiding any but a minimum of heat necessary to prevent chilling.

To crystallize the principle of vascular effects desired in cardiac decompensation, let us say that it is *vigorously increased alternate dilatation and contraction*, but always with the maintenance of tone; that is, the average of a lessened blood vessel calibre.

TOXIC GOITER

Before the advent of iodine as a preparation for surgery in toxic goiter, I had worked out a physiologic method of controlling the peculiar vascular condition present in hyperthyroidism, so as to lessen the surgical risk greatly. The peripheral blood vessels in toxic goiter are greatly dilated, but nevertheless with enhanced activity, so that, in many cases, the systolic and diastolic pressures are wide apart, the systolic being raised and the diastolic lowered or remaining normal, thus making a very high pulse pressure.

The essentials of this preoperative treatment consisted of absolute rest in bed, with an ice bag to the heart and goiter alternating, twenty minutes each, all day long. Once, and much better twice, a day, a cold mitten friction was given, but without any preliminary or accompanying heat, in many cases not even a hot foot-bath. The air of the room was kept cold, so as to gain, as far as possible, the beneficial effects of cold weather or a cold climate, as it is well known that persons with toxic goiter are better in a cold environment, whether in winter or from a northern climate.

When iodine began to be used I felt that it had largely rendered unnecessary this hydrotherapy program, but it was continued, inasmuch as the use of the iodine required a week or two in the more highly toxic cases, especially those of long standing with cardiac embarrassment. So the two were given together during the week or ten days of surgical preparation. The results were seemingly all that could be desired, but I gave the credit for a safe operation largely to the iodine. Not until this last year did anything arise to alter my opinion of their relative values.

I operated upon a patient of slightly over fifty years of age, with a severe toxic goiter. The case was outside of a sanitarium, and only the iodine preparation had been used. The pulse was very rapid to begin with and mounted higher and higher on the operating table, until it reached 160, then 180 and finally, for a time, 200 per minute.

The convalescence was stormy with a heavy thyroid thermic reaction, but full recovery ensued and today the patient is well and with a perfect heart.

A few months later I was asked to see in consultation the aunt of this same patient, also with toxic goiter. She was 74 years of age, with a pulse of 160 all the time, and often higher. The tremor was most extreme and involved all parts of the body. The nervous and mental agitation at the time of my visit was more exaggerated than I had ever seen before in a goiter patient. Neither the physician in charge of her case nor I felt that she could ever be brought to a condition sufficiently safe to warrant attempting operation. She had previously worn out iodine therapy. Nevertheless, something must be done; so a nurse was secured and the usual hydrotherapy program carried out, with an ice bag to the heart and goiter alternately all day and with the cold mitten friction, repeated three and four times every day. Ice-water is always used for this treatment, but in this case the mitts were dipped repeatedly for each part.

In ten days I was totally surprised by being called to operate. The pulse had come down to 120. On the operating table the pulse never went much above 160 and the convalescence was far more tranquil than had been the case with her niece, and that in spite of her greatly exaggerated condition to begin with, and at the age of 74—a disparity in ages of over twenty years.

Dr. H. W. Miller, with no preoperative hydrotherapy, has used an interesting form of postoperative hydrotherapy. It consists in the use of two ice bags, centering over the heart area, in case the temperature does not exceed 100.5°F. If it goes above this he uses, also, thick, ice-cold compresses, taken directly from ice or ice water and applied to the chest, shoulders and arms, the total area covered depending upon the degree of hyperthermia. These are changed so frequently (every two or three minutes) as to preclude any warming or heating compress effect. His stated principle is the control of the thermic reaction. Personally, I believe the maintenance of heart muscle tone and of blood vessel tone is even more important, though, of course, any such program must of necessity have both effects.

INFLUENZAL PNEUMONIA

Prior to the influenza epidemic, I had radically revised my program for the treat-

ment of lobar pneumonia. In the stage of congestion I had been taught that the collateral heat to the extremities, for the purpose of derivation, may be reinforced by the reflex vasoconstrictor effect of cold, locally applied. You will find this stated in my textbook on hydrotherapy. This I found to be a delusion and a snare and it may even be dangerous, if carried out logically as the theory provides.

First of all it is in question whether or not there be vasoconstrictor fibers to the vessels of the lungs; second it has been quite definitely shown that chilling of the surface also lowers the temperature of the respiratory mucous membranes and certainly does not favor the relief of pulmonary congestions. Clinically, I found much better results, in the initial stage of congestion, by using, simultaneously, both direct and collateral heat for derivation.

The treatment consists of a hot foot-bath, with very hot fomentations to the chest, all given under heavy blanket covers and with a hot drink, preferably lemonade, to produce vigorous sweating. This may require only three, but often four or more fomentations. When the chilling has been overcome, the patient thoroughly warmed and profuse sweating secured, a single part is uncovered and treated with the cold mitten friction. No other part is uncovered and all hot applications are still in place. This is continued until all parts have been treated with the cold mitten friction, removing the hot applications only as the part where they are applied is reached. This derivative and sweating treatment reduces the lung congestion (depletion) by dilating the peripheral vessels, while the cold friction restores vascular tone, stimulates vascular activity and so vigorously redistributes the blood and stabilizes the circulation as to prevent re-congestion.

I have many times used this very successfully in the first few hours of a clinically typical lobar pneumonia, for example a case of sudden severe chill, temperature immediately rising to 103° or 104°F., sharp agonizing pain in the chest, respiration of 40 or above and suppression of breath sounds in the base of the lung. In these cases, the symptoms subsided rapidly and the temperature reached normal in three days. Of course, if treatment was much delayed after the onset, say for twenty-four hours, a full-fledged hepatization would occur and the disease would then pass

through its regular stages, even though the symptoms were greatly ameliorated and a safe issue secured.

This method of aborting lobar pneumonia, and a somewhat similar program of treatment of the later stages and also of bronchopneumonia, had become with me a settled thing before the advent of the influenza pandemic of 1918. I used no cold compresses on the chest, no ice bags and not even moist heating compresses. My success was far better than under the former plans. This change in my ideas and methods of treatment better prepared me to cope with the influenza epidemic and with the complicating pneumonia. Nevertheless, I had something more to learn regarding the vasomotors in that disease, their pathologic physiology and therapeutic use; at least I only partly understood their vast importance by my previous experience.

During the first few weeks of the epidemic my methods were somewhat uncertain. I used the hot foot-bath and fomentations, but hesitated to use the cold mitten friction, substituting warm sponges or, at most, not venturing out upon a vigorous program with any certainty of its correctness.

Then there came a short lull in the epidemic, and it was during this time that one particular experience occurred that compelled me to branch out upon a definite program, based upon definite principles and from which I have not deviated since, except to meet individual conditions in individual cases as they arise.

Two children were at this time waiting for tonsillectomy and, not knowing but the worst was all in the past, they were operated upon under the usual ether anesthesia. One was an epileptic boy of five years of age. He promptly contracted influenzal pneumonia, with a greatly exaggerated inflammatory pulmonary edema, and died in convulsions. For four hours after the lifeless body was removed to the undertaking parlors, a foamy froth continued to issue from the mouth.

The other child, a girl of twelve, also promptly contracted influenza and rapidly developed an extreme pulmonary edema—influenzal pneumonia. The temperature daily reached 104° or 105° F. To say that I sweated blood over that child, in view of the other experience, is to speak mildly of my concern regarding her. We had seen some others die of toxemia in twenty-four

or forty-eight hours and we entertained no hope of recovery in her case, where the damaging effects of an ether anesthesia had been added. I saw at once that a program of derivative heat alone would be a dish-water policy, entirely inadequate to meet the barest necessities of the case. The lungs were filled with all sizes of moist rales from apex to base and involving both lungs entire. She would have drowned in her own serum, so intense was the inflammatory pulmonary edema and so profound the toxemia and circulatory failure from vasomotor paresis.

Each treatment consisted of a hot foot-bath and fomentations to the front and back of the lung areas, including the lateral chest walls also. It was not pushed to vigorous sweating, as its frequent repetition would have been debilitating, but to thorough reddening of the skin and consequent derivation. It was intimately combined with the cold mitten friction, in the manner related regarding the program for the abortion of lung congestion in lobar pneumonia. This treatment was given two and three times a day. In three days the inflammatory edema was under control, and in five days the temperature reached normal. No medicines were used, no cough syrups nor sedative drugs.

Other experiences, close upon the heels of this one, quickly crystallized my ideas of the absolute necessities in these severe influenzas and influenzal pneumonias. Some patients would have great, dusky-red areas of hypostatic skin congestion, even when first seen. Some patients would become cyanotic on the application of a single fomentation, so intense was the paretic vasodilatation present, which, of course, the heat alone could never remove. Such patients, fortunately very rare, invariably died, as did also those who had been given regular doses of morphine or strychnine for a week or two previous.

Of course the vasomotor and vascular stimulation are not the only effects of the program carried out. It increases the oxidation of bacterial toxins and body wastes as well, and hastens their elimination. It stimulates leukocytosis, phagocytosis and the production of protective and immune bodies as nothing else can. Because it lessens toxemia, it lessens vasomotor paresis; and because it enhances histolytic and cytolytic bacterial destruction, it cuts off bacterial toxemia at its source and quickly clears delirium, rapidly lowers fever and

relieves all the other clinical manifestations of this most baffling disease.

In institutional practice, since then, I have added the use of diathermy and the zoalite in all types of pneumonia, but of course, we have had no such severe influenzal pneumonia since 1918 and 1919. Diathermy, theoretically at least, seemed to offer decided advantages as a helpful adjunct to hydrotherapy. Clinically, however, it has been somewhat disappointing; but the heat lamp has supplied its place and proved itself, not only a helpful adjunct, but having, in some ways at least, certain features even superior to the heat of fomentations. I use it from one to two or three times a day, in place of repeating the combined hydrotherapy treatment; but of course it cannot produce vasomotor stimulation as does the tonic hydrotherapy.

COMPLICATING DISEASES

Before dismissing the subject of vasomotor effects, I wish to speak of certain complicating diseases which conflict with the carrying out of this program in influenza.

In a patient with *Raynaud's disease*, influenza must be treated without the cold mitten friction. So intense is the vasoconstriction in this disease that only vasodilators can be used; hence only the heat of any form of physical therapy, whether fomentations, heat lamps or diathermy. The slightest use of cold causes intense pain in the extremities, especially the fingers. The aim is, not the *method* of treatment, but the relieving of the pathologically disordered function and the restoration of normal function; hence the treatment must invariably be suited to the condition present.

One more observation is worthy of recording; namely, the occurrence of influenza and pneumonia or acute infective pulmonary congestion in a patient with *toxic goiter*. At the beginning of the influenza epidemic I had such a patient under my care. A woman thirty years of age, with an enormous goiter of the exophthalmic type and of many years standing. In seven consecutive weeks she had six attacks, relapses or exacerbations of influenzal pneumonia, or at least a pulmonary congestion of the influenzal type. I endeavored to treat it by the methods which I have outlined, one item of which was the fomentation to the chest (lung areas only, with an ice bag over the heart). She at once

informed me that, when she had pneumonia once before, heat gave no benefit but made the congestion worse, and that cold compresses had to be used. I persisted for two or three of the six relapses, but on a modified plan, with cold compresses following the fomentations. But even this had to be discontinued and cold compresses alone were used with the remainder of the attacks, and with far better results.

How very rare is a frank, full-fledged pneumonia of any type in toxic goiter! The intense and extreme vascular activity is undoubtedly responsible for this rarity, since pulmonary stasis is almost entirely incompatible with, or impossible, in the presence of such excessive blood vessel activity. This same condition doubtless is the safeguard against the occurrence of post-operative pneumonia in goiter patients, even where frequently-changed, ice-cold compresses are used on the chest.

SUMMARY

1. In the cardiac decompensation of mitral disease without arrhythmia, the vascular condition is one of *relaxation or dilatation without activity*. It requires *vasomotor stimulation, with restoration of tone*. It is accomplished by *cold with friction*. More than brief heat, and that at a distance from the heart, is harmful.

2. The vascular condition of toxic goiter is one of extreme *vasomotor activity*, but with *marked dilatation*. It requires the *vasoconstricting effects of much cold*, frequently repeated or even continuous. Reaction must be maintained by friction. *Any heat at all is contraindicated*.

3. The vascular condition of severe influenza and influenzal pneumonia is one of *toxic paralysis*. It requires *vasomotor stimulation with restoration of tone*, which is ideally accomplished by *initial heat with cold friction*, vigorously applied. The heat also accomplishes derivation.

These three diseases—cardiac decompensation, toxic goiter and influenzal pneumonia with its conflicting complications—will perhaps serve to show the very great importance of careful study and clinical observation of the condition of the vasomotors and the resulting vascular states, and consequently of suiting the treatment to secure, as far as possible, a restoration to normal.

An intimate practical knowledge of physiology, both normal and pathologic, is

an essential to accurate clinical observation and the *sine qua non* of successful hydrotherapy. I may also add that it is scarcely

less important for the surgeon, as well as the physician, if he would be a safe pilot to health, instead of a mere mechanic.

Radium in General Practice

By FRANK L. ABBEY, M.D., *Newton, Kansas.*

THE therapeutic use of radium has heretofore been limited by its scarcity and expense. However, the cost has decreased almost fifty percent in twenty years. It is largely in the hands of the larger hospitals and clinics which receive patients for treatment. The expense of travel and board is thus added to cost of treatment. In a few places, radium is kept for rent, making it possible for the physician to obtain it for special cases, if he cannot afford to own it.

Another reason why radium is not in more general use is the bad reputation it has gained from the advertisements, by fakers and quacks, of "radium belts" and waters which contain little or no radium. Newspaper reports of "burns" have also made the public afraid of its use. Serious cases of this kind have usually been in the workers in radium laboratories, by constant handling without adequate protection, and not in cases receiving treatment.

Medical colleges, as a rule, pay little attention to teaching of x-ray and radium treatment. Their graduates know little about radium; they are ambitious to do surgery, and surgeons are not inclined to use it when they can use the knife. When that fails, they sometimes refer the patient to x-ray or radium specialists, to retard or palliate a hopeless case. Then the last form of treatment is blamed for the fatal termination.

There are certain diseases, most often seen early by the general practitioner, that are amenable to treatment by small amounts of radium, by the outlay of little time and expense in learning the technic. I will mention a few of these.

Skin epitheliomas of the basal-cell variety, especially about the face, yield rapidly to radium treatment. The resulting scar is soft and little different from surrounding tissue, except, of course, that, on hairy surfaces, the hair does not return.

Keloids, resulting from scars of cuts or burns, are reduced in size and improved in color by radium. Small angiomas in young children, treated with radium, give very satisfactory results and, as they often are found on the face, their removal, with good cosmetic effect, is very desirable.

Scaly formations on the face and hands of elderly people are often the precursors of skin cancer. One application of radium is usually sufficient for their removal.

Recurrence of **nasal polyps** can be prevented by the use of radium, following their surgical removal.

Warts at the edges of the nails are permanently removed by radium. Plantar warts require more treatment, but the result is a grateful patient.

Incipient cancer of the lip is often checked by radium, if used before metastasis has taken place. There is greater penetration of the tissues and less loss than in surgical operation.

Reduction of the size of the glands in tuberculous adenitis and some improvement of clinical symptoms are usual in radium treatment.

In bleeding near the menopause, where the loss of blood produces weakness, pallor and extreme anemia, with no severe inflammatory or abscess conditions of the uterine appendages, or where hysterectomy is refused, a moderate treatment with a small amount of radium will produce a cessation of the hemorrhage and improve the blood and the general condition of the patient. Detention from usual employment is of short duration; anesthesia is short; and a serious operation avoided. Fibroids of small size are made smaller.

Probably the most serious condition in which there is a tendency to supplant surgery by radium is in cancer of the cervix. It is so serious that neither treatment affords more than palliation in most cases. Radium will lessen the foul-smelling

discharge and clear up the local condition in a surprising way. Its effects will penetrate the deeper tissues that are not reached except by the severe Wertheim operation. In early cases, confined to the cervix, it sometimes cures.

The possibility of stimulation of malignancy by the use of too-small amounts of radium is being discussed; also the breaking down of normal tissues by too-large amounts. In ordinary severity of the con-

ditions I have mentioned, as little as 50 mgm. of radium may be successfully used. Knowledge of the action of radium and the technic of application may be soon acquired. With the purchase of a small amount of radium, or its rental as needed, it is possible for the general practitioner to make a valuable addition to his equipment.

209 East Broadway.

CLINICAL MISCELLANY

The Radiological Research Institute

THE Radiological Research Institute Incorporated, which was organized in Detroit at the time of the 81st Annual Meeting of the American Medical Association, was incorporated under the laws of Delaware, August 27th, 1930.

It is a non-profit-sharing corporation, organized to stimulate research in radiology and allied arts and sciences by creating one or more fellowships in any suitable institution and possibly by establishing a central research laboratory; to collect, correlate and disseminate all available scientific knowledge in the field of radiology; to investigate and develop the production and application of radium and other radioactive substances.

At present, the Institute will be content to establish fellowships in universities and institutions especially equipped to work out some of its immediate and most pressing problems. Three fellowships have already been placed in the University of Illinois under the direction of Dr. George Clark, to work on a new x-ray tube. Other fellowships are being considered for two other important and well-known institutions which are in x-ray tube development.

It is hoped and planned to develop certain standards which all x-ray tubes will be required to meet before being placed on the market. Many tubes received direct from the factory now are useless when first tried, or their lives are very short. This has been a severe tax on the roent-

genologist, both financially and otherwise. It has necessarily increased the cost of medical care.

The Institute will co-operate with the Bureau of Standards and the National Health Institute in an endeavor to make their work more effective. Not only is medicine concerned in the objects of the Institute, but, proceeding on the basis that what radiological development proves to be of value in any of the fields of industry, pure science or medicine may be of value in any of the other fields.

Many of the objects enumerated may sound hostile to manufacturers of x-ray apparatus, but it is not so intended. It is believed the work of this Institute will be a real help to the manufacturer, who at present necessarily spends large sums of money in research in the production of certain articles. This cost must of course be added to the sales cost and the sick man eventually pays it. The directors see the time, in the not-too-far future, when, as a purely scientific institution, it will sponsor much of this research work and will issue licenses to manufacturers to produce and sell articles whose patents the Institute controls.

There is abundant radium ore in this country and, up to the time of the War, the world was supplied with radium extracted from the carnotite ores of Utah and Colorado. Then the Belgians discovered ore in the Congo region, which was many,

many times richer than American ore. The immediate result was the abandonment of the American ore fields, and the Belgians have practically supplied the world with radium ever since, though there is some supplied from Czecho-Slovakia, in whose ore Mme. Curie made her great discovery, and elsewhere. The Belgians reduced the price from \$120,000 per gramme to \$70,000 per gramme, which was greatly appreciated.

However, the Radiological Research Institute, upon investigation, has good reason to believe that radium can be extracted from the low grade American ore and sold at a good profit for at least less than a third of the Belgian price, and why should we be at the mercy of a foreign monopoly when we have plenty of our own ore at a price that will enable us to compete with the foreign market? Radium is now being used in the industries as well as in medicine, and with present x-ray equipment it is probably better adapted to the testing of steel than are the x-rays.

The Chemical Foundation did not organize the Radiological Research Institute, but is backing it to a large extent. Contributions are invited to carry on its work, which will mean much for the future sciences, especially medicine and industry. All interested in radiological science are invited to become stockholders at \$10.00 per share, but the only dividends that will accrue from the investment are those that come with the satisfaction of having assisted in the worthy enterprise of making the treatment of the sick, especially cancer, more effectual and less costly, and of having contributed to the advancement of science and of industry.

The directors will appoint committees from among our leading scientists who seem best equipped to pass upon and control any research suggested.

The present officers are:

President—Dr. Edwin C. Ernst, of St. Louis, Mo.

Vice-President and Business Mgr.—Mr. William Buffum, 654 Madison Ave., New York.

Secretary—Dr. Rollin H. Stevens, of Detroit, Mich.

Treasurer—Dr. D. S. Childs, of Syracuse, New York.

ROLLIN H. STEVENS, M.D.
Detroit, Mich.

High-Frequency Indications

He who can perceive no therapeutic difference in the indications for high-amperage-low-voltage and low-amperage-high-voltage currents, because they are all educed from high-frequency current cannot, likewise perceive any therapeutic difference in the indications for opium, morphine and poppy seeds, because they are all educed from one botanical source.—DR. FASSETT, of *Medical Herald*.

Therapeutics of Heat and Cold

The effectiveness of cold is principally due to the mechanical abstraction of heat and not, as is supposed, to its reflex action upon the blood vessels, causing vascular contraction. Heat is a necessary element in the process of inflammation and no inflammation will take place unless a favorable temperature is maintained. The application of cold must, therefore, be regarded as mechanical and not physiologic in principle, and should be used only when it is desired to *interfere with or retard the processes of inflammation*, by removing one of the essential elements of the process itself—heat.—B. LEVITT, D.D.S., in *Dental Cosmos*, May, 1930.

Lymphangitis

There is no treatment known at the present time which will give the same relief, with complete disappearance of the glandular infection and enlargement, as does radiation, in infections of the lymph glands, especially those (of such frequent occurrence) which we see in childhood. This treatment applies equally well whether the infection be of the tuberculous or chronic streptococcus type. Treatment must not be too rapidly pushed, but fractional doses administered.—Dr. H. A. CHAPIN, Jacksonville, Ill., in *Illinois M. J.*, April, 1930.

The X-Rays and Inflammatory Conditions

It is well known that lymphocytes are extremely sensitive to radiation and are destroyed quite rapidly by exposure to the x-rays. It is, therefore, not surprising that many inflammatory processes are rapidly and markedly influenced by irradiation. This does not lead to a spread of infec-

tion. I believe that more than 50 percent of boils and carbuncles may be aborted if treated early, and decided benefit derived if treated before complete necrosis has occurred.—DR. R. W. FOUTS, Omaha, in *Radiolog. Rev.*, Dec., 1929.

Light Treatment in Chronic Rheumatism

Approximately 200 cases of chronic rheumatism are treated by me every day, comprising cases of both arthritis and muscular rheumatism, the most important being cases of lumbago and neuritis including,

especially, sciatica. About 100 patients receive light therapy in one form or another. The most usual forms are ultra-violet as a general bath, to improve the general conditions, or local ultra-violet with the mercury vapor lamp for a strong reaction, up to the point of blister formation.

Another form of light therapy (electric light bath) is also often used, especially in the numerous forms of chronic rheumatism in the climacterium and in fibrositis. Thousands of cases of chronic rheumatism have been treated by me in these ways. DR. J. VAN BREEMEN, Amsterdam, in *Brit. J. of Actinotherapy*, Jan., 1930.

RECENT ABSTRACTS

"Absence of Shadow" in Cholecystography

Although it is a significant cholecystographic sign, "absence of shadow" or non-visualization of the gall-bladder, requires as much care in interpretation as any other sign in a diseased abdominal viscus.

On the basis of the study of the clinical records of 100 cases with "absence of shadow," Dr. K. H. Kretchmar, of the Battle Creek Sanitarium, reports that "absence of shadow" in intravenous cholecystography showed a percentage of constancy of 75 percent in 19 recheck cases.

At least 75 percent of "absence of shadow" cases are due to chronic cholecystitis with gallstones; but care must be used in the interpretation of the sign, because among the more rare causes are listed carcinoma of the pancreas or biliary system and cases of marked damage to the liver.

In 38 "absence of shadow" cases with gastric analyses, 10 patients had normal acidity, 15 had hyperchlorhydria, 3 had hypochlorhydria and 10 had achlorhydria.

The duodenobiliary drainage test did not check up with absence of shadow cases. In 75 percent of the cases the so-called "B" bile was obtained.

Pyretic Treatment of Rheumatic Conditions

In *Brit. J. Actinother. and Physiother.*, April, 1930, Dr. C. E. Sundell remarks that the old and valuable pyretic treatment of acute and chronic rheumatism, rather superseded by the antipyretic and analgesic effects of the salicylates, is again coming to play an increasingly important part.

The older hot, wet blanket pack, while good when properly given, is but a poor substitute for the "thermal couch", the principle of which is a chamber (in which the patient's body, except the head, is confined), warmed and

moistened by steam generated in a boiler heated by gas or electricity. The temperature inside the chamber is kept at from 105° to 110°F. A needle spray of hot, tepid or cool water is given after each bath. Each treatment lasts from 20 to 45 minutes, according to the reaction.

The acute rheumatic is febrile and sweats easily; the chronic rheumatic is hypothermic and sweats little or not at all. In acute cases, few baths are necessary; in chronic cases 30 to 40 baths may be required before success is obtained. Return of the sweat reaction to neutral and to normal quantity is the only reliable criterion of cure.

Cases suitable for pyretic treatment are acute rheumatism, lingering subacute rheumatism following an acute attack masked by salicylates, chronic synovitis and fibrous myositis, all forms of fibrositis and fibroneuritis.

Contraindications to treatment are few: Acute progressive valvular disease or pericarditis, profound asthenia and anemia exhaust the list.

Treatment of Mammary Carcinoma By Radiation

Dealing with interstitial radiation treatment of carcinoma of the breast, Sir G. Lenthal Cheatle, of London, Eng., in *Brit. M. J.*, May 3, 1930, remarks that the radical removal of an operable carcinoma of the breast will always be safer than an inadequate radiation of the gland.

In the radiation treatment by radium, Dr. Cheatle strongly emphasizes the necessity of radiating the whole breast. The reasons are, principally, because the precise localization of cancerous tissue or its extent cannot be determined adequately, clinically. For this reason, in his technic for inoperable cancer cases, he uses 80 milligrams of radium element, distributed in 29 needles of various lengths.

The needles are arranged in three layers, all the needles in each layer being parallel to each other, but in a direction at right angles to those of the layer beneath. The three longest needles

(8.75 cm. long, 5 mg. each) are in the center of the bottom layer and are placed in position with the aid of trocar and cannula in the posterior part of the breast, so that subsequent radiation will include the posterior part of the breast, the submammary connective tissue and the upper fibers of the pectoralis major muscle. The filtration is 5 mm. of platinum.

The center of the nipple is perforated by a needle, which is left in such a position that the situation of its eye corresponds to the base of that structure. If there is a definite lump, additional needles are passed through it and around its circumference.

The general idea in the author's technic is that a small dose can be delivered evenly over the whole gland for a comparatively long time.

The Interaction of Ultraviolet Rays and Infrared Rays

Dr. R. King Brown, in the *British Jour. Actino.*, April, 1930, states that certain groups of rays seem to assist or reverse the action of other groups, according to the sequence in which they are used on the skin, especially the heat rays and ultraviolet rays. The problem is whether these rays should be given together or at different times.

Shattock and Waller have shown, according to the author, that, if heat is given after ultraviolet, it diminishes or suppresses the actinic erythema and delays its appearance. The same follows if both are given at the same time; but if heat is given before ultraviolet irradiation, the actinic erythema is increased and the time of its appearance is not appreciably influenced. Later investigations have confirmed these findings.

Thederer points out that red antagonizes violet, and so ultraviolet inflammation, including sunburn, should be combated by red light, which is actually the case.

Physical Therapy in Mental Disease

In *Physical Therap.*, Feb., 1930, Dr. H. A. Cotton, states that, in the Trenton State Hospital during the past 10 years, there has been a change of view in regard to functional mental disorders. These are now regarded as being, to a large extent, dependent upon physical causes and the treatment has been directed toward these physical causes.

Foci of chronic infection, particularly the teeth, are shown to be frequently associated with mental disease and the necessity is pointed out of removing all infected teeth, whether vital or devitalized.

Another most important concomitant of mental disease is a disordered colon. Formerly, when such was found the colon was removed surgically. The operation was found successful but the mortality was extremely high. Better results were obtained with Lane's method of treating intestinal stasis. At the present time, surgery has almost been abandoned and massive colonic irrigations are used. The Kny-Scheerer

table is employed and this work has become so important that now every patient, as soon as admitted to the hospital, is immediately put on irrigations.

In conjunction with the colonic irrigation, on alternate days, diathermy and the Morse sine wave are used to restore the muscular tone of the colon.

The greatest contribution which physical therapy has made to the treatment of mental cases has been in the treatment of intestinal stasis; but the author points out that, unless other systemic sources of infection are eliminated, the treatment of the intestinal tract will not be successful.

Physical therapy has superseded operation in 80 percent of the cases which show intestinal stasis.

BOOKS

Voltz: Dosage Tables for Roentgen Therapy

DOSAGE TABLES FOR ROENTGEN THERAPY. By Professor Friedrich Voltz, Head of the Radiological Department University Clinic for Women. Translated from the second German edition. London and New York: Humphrey Milford, Oxford University Press. 1930. Price \$2.50.

Professor Voltz has elaborated a series of dosage tables to assist the radiologist in estimating dosage.

The spreading, absorption and scattering of the ray, with special factors in determining dosage, are all considered in detail.

The percentage deep dose is the only measurement necessary when using these tablets, and the ionometric and photographic methods and the measurement with the selenium cell are fully considered.

The tables are of considerable value to the radiologist particularly interested in therapy, but would be of little interest to the physician only casually concerned with this branch of radiology.

W. H. G.

Albrecht: Roentgenology of Gastro-Duodenal Ulcer

DAS ULCUSPROBLEM IM LICHTE MODERNER RÖNTGENFORSCHUNG. Von Priv.-Doz. Dr. H. U. Albrecht, Oberarzt der Medizinischen Universitäts-Klinik Frankfurt A.M. Mit 116 Abbildungen. Leipzig: Georg Thieme, Verlag. 1930. Price M. 10.

A copiously illustrated monograph which should be very valuable to roentgenologists and clinicians who read German, in the interpretation of roentgenograms of the gastro-duodenal tract and the diagnosis of the various types of ulcers. The author deals with the subject from a clinical aspect. It contains a bibliography of references to literature.

THE SEMINAR

CONDUCTED BY
MAX THOREK, M.D. (*Surgery*)
GEORGE B. LAKE, M.D. (*Medicine*)

[NOTE: Our readers are cordially invited to submit fully worked up problems to the *Seminar* and to take part in the discussion of any or all problems submitted.

Discussions should reach this office *not later* than the 1st of the month following the appearance of the problem.

Address all communications intended for this department to *The Seminar*, care CLINICAL MEDICINE AND SURGERY, North Chicago, Ill.]

PROBLEM NO. 10 (SURGICAL)
(See CLINICAL MEDICINE AND SURGERY,
Oct. 1930, p. 771)

Recapitulation: The patient (W. R.) was struck by an automobile, inflicting a slight scalp wound above the occipital protuberance. He was not unconscious and was able to walk.

The next morning his pupils were dilated and reacted slowly to light; aphasia was present, but no bleeding from the nose or ears; knee reflexes were sluggish; he was very restless.

In the evening he was comatose, and rigidity of the neck and limbs was beginning. His blood pressure was 160/90 and spinal puncture revealed bloody fluid under considerable tension.

The following day, the pupils were unchanged, rigidity more pronounced; Kernig's sign present in both legs; coma deeper; x-rays revealed no fracture. He died on the third evening after the accident.

Requirements: (1) Diagnosis—what? Where? Why; (2) Suggest treatment.

DISCUSSION BY DR. J. R. SMITH,
WARSAW, MO.

This problem is very interesting to me and I am eager to see the solution.

My diagnosis would be unilateral hemorrhage into the cerebrum, due to the fall (concussion), with rupture of a small artery (or possibly a vein, as the symptoms developed slowly, with continued dilatation of both pupils).

The injury was above the base of the brain, as shown by absence of hemorrhage from the nose or ears. The increased bleeding produced pressure equally on all centers, causing a gradual increase in paralysis until the end, the optic thalamus being the first to register the dangerous condition of developing pressure.

It would seem rational to believe that the ruptured blood vessel may have been in the neighborhood of the transverse sinus, where pressure would be equal in all directions. The base of this sinus comes in close contact with the optic thalamus, and would indicate the first registering of serious symptoms.

Would trephining and ligation have saved this patient's life? That, in such cases, has always been a serious problem in my mind. Would hemostatic serum, given hypodermically, with ergotine, have changed the outcome?

DISCUSSION BY DR. F. W. SCHROEDER,
STRASBURG, ILLINOIS

There is an intra-cranial injury and it is important that this be carefully diagnosed. It is a known fact that intra-cranial bleeding, when it is slow, may not produce immediate and grave symptoms. The brain will accommodate itself to pressure, up to a certain point. When this point is reached, the symptoms come on rather rapidly. Evidently that was the case with the patient in question. But, instead of typical compression symptoms, we find symptoms unrelated, suggesting

more than one distinct pathologic condition.

The slight scalp wound, followed by such severe symptoms, without fracture, that death followed in less than three days, seems to preclude the thought that the patient was struck on the head, but suggests instead that the head struck a stationary object. Since no detail of the accident is given, it is reasonable to assume that when W. R. was struck by the auto, his body was propelled in its longitudinal axis, which motion was stopped by his head coming in contact with a stationary object. When this happens, a tremendous pressure is brought to bear on the vault, causing it to be depressed, the sides of the cranium to be forced outward and a break to occur somewhere at the base of the skull.

Again, the same sudden stoppage of the head may produce a fracture of the base of the skull in a different way. The vertebral column, with perhaps 150 pounds of body attached to it, is suddenly driven, like a heavy battering ram, against the ring of the foramen ovale, causing a fracture of almost any magnitude at the base of the skull, even the driving of the ring surrounding the foramen ovale into the posterior fossa.

The fact that there was so little shock and virtually no symptoms of profuse hemorrhage immediately after the injury, precludes a gross fracture as just mentioned. But still, assuming that he was propelled longitudinally and that his head was the point of contact when his body was forcibly stopped, we can understand how the injury to the meninges, which is clearly shown by the symptoms, could have materialized. The aphasia, great restlessness, the neck, arm and leg rigidity, Kernig's sign, spinal fluid under great pressure, all point to a *traumatic meningitis*. Such an irritation to the meninges causes the production of excessive cerebrospinal fluid, hence the pressure. The blood found in this fluid may be, and probably is, due to the rupture of a blood vessel or blood channel within the cranial cavity.

Also, there is very good reason, from a few of the symptoms mentioned, to suspect uremia or traumatic diabetes. He may even have been a diabetic at the time of the accident. Instead of contracted or unequal pupils, we have dilated pupils, reacting slowly to light. This suggests an immediate urinalysis. We should be wide awake to the fact that a fracture of the

base of the skull, particularly a fracture involving the fourth ventricle, or any other serious traumatism of the skull, may be a precipitating cause of diabetes or uremia. One should be positive that the urinalysis is carefully made and repeated several times.

Lacking much detailed information and basing my deductions on the few cardinal symptoms given, I am of the opinion that W. R. was suffering from a traumatic leptomeningitis, with a slow but persisting hemorrhage, probably likely due to some fracture at the base of the skull, and possibly also a traumatic uremia or diabetes, depending on the result of a careful urinalysis.

While this diagnosis can be successfully defended, a complete description of the case might have brought me to a more nearly correct conclusion. In that case it would not have been a problem but a solution.

Assuming that the diagnosis given is correct, there are two courses open to us. We can do repeated lumbar punctures or trephining. One must be governed by conditions. I believe that, in this man, trephining was indicated after the lumbar puncture was made.

Ice to the head, a dark and quiet room (I would stress the quiet), with such medication as might be indicated, should relieve the patient's suffering somewhat and make him more tractable.

If uremia or diabetes were a complication, I would treat them according to accepted standards.

CLOSING DISCUSSION

BY DR. MAX THOREK, CHICAGO

This interesting problem is timely. With the marked increase of inebriety from adulterated and poisoned alcohol, trauma of the skull has increased in frequency to no small degree. All of us in the practice of general surgery are constantly confronted with such problems as Dr. Griffith has presented.

In his "Requirements" he gives us a "big order." To discuss these various phases at length would take us too far afield. We can only strike the high-lights.

I advise a careful reading of the discussions of Drs. Smith and Schroeder. The latter has gone very fully into the case and his reasoning is logical and worthwhile.

We find that the patient received a slight scalp wound above the occipital protuberance. A significant point in this portion of the history is that he was not unconscious and was able to walk. Many an individual who presents himself for admission to a hospital, particularly a municipal institution, is diagnosed as "mild concussion" or "drunk," when, as a matter of fact, a fracture of the skull exists.

I am appending an illustration of one of my own cases (Fig. 1). Please observe the fracture lines in the occipital, parietal and frontal regions. Yet, there were no subjective manifestations and the injury was disclosed only through the medium of the x-rays. Such instances are not infrequent; they are rather common.

The patient of Dr. Griffith showed definite symptoms on the day following the injury. There was no bleeding from the nose or ears but, in the evening, coma set in, accompanied by rigidity of the neck and limbs.

The situation points, at this stage of the history, to blood in the spinal fluid, which was under considerable tension. This, of course, at once indicates cerebral mischief. The symptoms, as we know, now increased and the patient died on the third day.

Nothing is said in the history as to what treatment the man received. We take it for granted that he was left alone, without any surgical interference. I am thoroughly in accord with Dr. Schroeder, who insists that a more complete history be given, in order to outline the proper therapeutic course to pursue.

It is a well known fact that, in fractures at the base of the skull, the most common cause of death is meningo-encephalitis. Did this man present such symptoms? Of course he did! While nothing is stated about the temperature in this case, the symptoms point to the fact that there was meningeal irritation, with indications of compression of the brain. The finding of blood in the spinal fluid, under tension, is sufficient to corroborate the suspicion of fracture at the base of the skull, regardless of whether or not there were positive findings on the x-ray film.

It is well known that a small, linear fracture at the base of the skull is very difficult to diagnose. One must not, therefore, pin his faith to an x-ray diagnosis, just as one would not exclude the



Fig. 1: Fractured skull; no immediate subjective manifestation; injury discovered by x-rays.

presence of gall-stones in patients with negative x-ray findings.

As a matter of fact, relief of pressure was indicated at once, either through repeated spinal punctures or by trephining the skull. *Relief of pressure was the key note of treatment as soon as it was discovered that the spinal fluid was under tension and contained blood.*

A note of warning in these cases: Not more than 18 to 20 cc. of cerebral spinal fluid should be withdrawn. Abstraction of larger quantities might be dangerous. Should symptoms of compression appear again on the following day, another spinal puncture should be done, and this should be repeated as often as deemed advisable.

If the cerebral symptoms persist and the patient becomes worse, a subtemporal decompression is indicated and should not be delayed. No less an authority than Harvey Cushing has, many years ago, obtained 13 recoveries in 15 cases trephined, in instances such as that under discussion. Vincent, of Algeria, as far back as 1913, reported 7 operations in similar cases, all followed by recoveries.

If one decides to resort to this surgical expedient, the decompression should be done on both sides. It is not a difficult operation. It can be done under local anesthesia; with a comatose patient, no anesthetic at all is necessary.

The dura in these cases should be freely incised and drainage instituted. It stands to reason that, in such a desperate condition as that described by Dr. Griffith, heroic

measures are indicated and should be resorted to.

Let us analyze for a moment the symptoms of severe cerebral mischief. In the first place we must keep in mind that a clean-cut, stereotyped picture of the classical symptoms is not the rule. The signs of fracture at the base of the skull are very often misleading and do not run true to textbook descriptions. A glance at the important symptoms will aid us:

1: Unconsciousness. (This was present.)

2: Hemorrhage. (This depends upon the situation of the fracture. If in the anterior fossa, there may be free bleeding from the nose, by reason of its close proximity to the cribriform plate of the ethmoid; or, the blood may infiltrate the contiguous regions. If the hemorrhage be in the middle fossa, the blood usually escapes through the ears. Sometimes hemorrhage from the ears is not observed, but may be discovered by an examination of the eustachian tubes. If the fracture is in the posterior fossa, the bleeding is usually subcutaneous, around the mastoid region, infiltrating the parts in this vicinity).

3: The escape of cerebral spinal fluid indicates that the dura has been torn.

4: Symptoms referable to lesions of the nerves are frequent.

Now let us see whether we can complete the requirements of Dr. Griffith. He first asks for a diagnosis. My diagnosis would be that symptoms such as those presented indicate a *fracture at the base of the skull, in all probability in the posterior fossa.*

My suggestions for treatment therefore are: (1) Relief of pressure by repeated spinal punctures; (2) if not thus relieved, temporal decompression, either unilateral or bilateral, should unhesitatingly be resorted to; (3) asepsis of the ears, and general treatment of such symptoms as may arise.

SOLUTION BY DR. GRIFFITH

Postmortem examination showed a linear fracture in the right posterior fossa; edema of brain over both cerebral hemispheres; multiple hemorrhages beneath the dura.

PROBLEM NO. 12 (SURGICAL)

Submitted by Dr. Frank Wm. Porterfield, Waterloo, Ia.

Mrs. C. H., age 46 years, married. Admitted May 24, 1930.

Subjective symptoms: Pain across the back and abdomen; diarrhea; persistent vomiting; loss of weight, appetite and strength.

She was perfectly healthy until January, 1930, when she first noticed a slight pain through the abdomen from her back (the exact location, as pointed out, was just above the umbilicus). This pain was constant, seemed to originate in the upper lumbar region and became diffused in the area surrounding the umbilicus. It has been gradually growing worse, though she has had no narcotics. It is always worse at nights, is relieved on getting up in the mornings, and she states that she feels fairly well until about 8 A.M. She admits the pain is invariably worse when in the recumbent posture, is not affected by food, and she has found nothing to relieve it. Movements of the spine do not affect the pain.

She had infected teeth and 23 were removed, following which she has had more or less diarrhea. The teeth were extracted two months ago and the diarrhea persisted until one week ago, when constipation ensued. While the diarrhea lasted, bowel movements occurred several times daily, always preceded by abdominal pain.

On January 1, 1930, she weighed 180 pounds; on the date of admission her weight was 134. The appetite has markedly decreased and her diet, lately, has been practically limited to fruit juices, which were the only foods retained. Her strength is greatly lessened, but she is not bedridden and walked into the hospital.

Menstrual History: The menses began at 12 years of age, and have been universally regular at 28-day periods, lasting four days. The last period was May 17, 1930. She has no metrorrhagia or menorrhagia and no unusual discharge; has been married 15 years; had one child and no miscarriages; her husband is living and well.

Family and Personal History: Father died of cancer of the stomach, at the age of 59; mother dead at age 48, due to "change of life"; five brothers and three sisters living and well; one sister died of tuberculosis of the bones, in 1904.

The patient has been healthy all of her life; had a tonsillectomy at age 16; admits slight dyspnea on exertion; no edema; no precordial pain; no palpitation; no cough; no nocturnal sweats; no bloody or tarry stools; no abdominal distress, except that

noted above. Genitourinary system, negative; no joint pains; no numbness nor tingling; no fainting spells.

Physical Examination: Reveals a middle-aged, white female, not acutely ill, mentally alert and cooperative. Mucous membranes are rather pale; skin soft and slightly atrophic; hair grayish; scalp normal. Pupils equal and react to light and accommodation; ocular movements normal. Nose and ears negative. Teeth all out, no plates; tonsils slightly enlarged; chest symmetrical; breasts pendulous. Apex beat within the mid-clavicular line; slight systolic roughening heard over entire precordium; rhythm regular; blood pressure, 100/40. Lungs, expansion good; no rales.

An indefinite mass was palpable in the upper abdomen, apparently in the anterior portion, above the umbilicus, showing slight tenderness on pressure; no cicatrices; old striae gravidarum. Liver, spleen and kidneys, negative. Patellar reflexes brisk, otherwise normal. Increased pulsation, suggestive of slight dilatation of the abdominal aorta, was noted. This area was very tender.

Uranalysis: Albumin none; sugar none; no casts; rare blood cells; two to five pus cells in each field.

One gastric analysis gave 24 free total acid; a second gave 10 free and 14 total (later total achylia developed); negative for blood and Oppler-Boas bacilli. One specimen of stool was watery, with no blood; a second specimen was also watery,

with a slight trace of blood. No parasites were found.

X-Ray Findings: A flat plate of the abdomen gave no evidence of pathologic changes, foreign bodies or stones. A barium enema showed no filling defects in the colon. The stomach outline was normal; no filling defect, after several plates and fluoroscopic examination; duodenal cap normal.

Blood Examination: Hemoglobin, 76 percent; red cells, 4,030,000; white cells, 8,450, with polys. 57 percent, eosinophiles 2 percent, lymphocytes 29 percent. No abnormal blood cells of any kind were found; blood and spinal fluid Wassermann tests, both negative.

The tenderness of which the patient complained was located directly over the pancreas, and the abdominal aorta at this point was somewhat more prominent than usual. A definite mass could not be palpated in the pancreas; i. e., it was not certainly a pancreatic neoplasm. The patient was having frequent attacks of vomiting, invariably of almost pure bile, and was unable to take nourishment. She was growing weaker day by day (thought to be, at least partly, due to lack of nourishment). Her pain was persistent and invariably made worse when lying on the back. On two occasions there were fatty stools, but these were wide apart and not at all conclusive to the examiner. Gastric lavage, which was tried many times, gave only temporary relief, and sometimes none at all.

Requirement: Tentative diagnosis and treatment.



BUY CHRISTMAS SEALS!

THE CLINIC

URINOLOGY

Carbohydrate Intolerance

By CLIFFORD MITCHELL, M.D., Chicago

IN 1895, Dr. Charles W. Purdy, of Chicago, pioneer in clinical urinalogy, drew our attention to the sweet-drink habit and to our growing addiction to carbohydrate luncheons. Were he now alive, he might be assured, by observation of the noon-day carbohydrate riot, that the straw has finally supplanted the knife, as a means of conveying nourishment to the mouth! Only the handwriting on the wall is lacking this daily Belshazzar's feast of sweets: If asked to supply the omitted four words, I would suggest, instead of "Mene, Mene, Tekel, Upharsin," "Asthma, Obesity, Glycosuria, Diabetes." For, given a person of defective carbohydrate tolerance, he will guzzle himself, through the straws, into one or another of these four; and what the straw doesn't do to him, the "reach for a sweet" will accomplish.

The tolerance of any given individual for carbohydrates can be scientifically determined by an elaborate program of procedure, undertaken by an expert at more or less considerable cost to the person. It is, however, the purpose of this discussion to suggest a simple, clinical method, within the reach of any practitioner and within the means of a large number of patients.

The first step in our clinical process is to provide copper sulphate of the *highest purity obtainable*. The next step is to make up Benedict's solution (qualitative; not quantitative), which shall contain its quota of this "highest purity" copper compound. The use of this particular article in Benedict's solution eliminates the occur-

rence of a large percentage of "doubtful" findings, i. e. those in which partial reduction of the copper compound takes place, leaving the practitioner in doubt whether a trace of sugar is present or not. The formula for Benedict's solution may be found in my book, "Modern Urinology," as well as in many other works on the chemistry of the body.

Not to be found in such works, however, are my directions for the collection of the 24 hours' urine, which have become an outstanding feature in the method about to be described. These directions have been published in full in *CLINICAL MEDICINE AND SURGERY* for February, 1927. They provide for the collection and preservation, without chemicals, of the day urine, the night urine and a freshly-voided specimen, separately. It is well, also, to add to these a special extra specimen, voided about two hours after the noonday meal, since experience shows that overabundant ingestion of carbohydrates at noon has become a national pastime. The directions for collecting urine are reproduced here, for convenience:

"Eat and exercise as usual, but drink not to exceed four cups of any kind of liquid (tea, coffee, water, milk, soup, etc.) during the 24 hours. Take no drugs for at least a day before beginning the collection. Do not take bicarbonate of soda, nor mineral waters.

"Void urine on rising, as usual, but do not begin collection until after breakfast. Urinate directly into a clean fruit jar, provided with a rubber ring. Save all urine voided from breakfast to bedtime in one jar, labeled No. 1. Save all voided from bedtime to breakfast next morn-

ing in another jar, labeled No. 2. Keep jars tightly closed and in the coolest possible place. Provide, also, a freshly-voided specimen after breakfast, in jar labeled No. 3. Take these jars, with entire 24 hours' urine, at once to Dr. Clifford Mitchell, Room 1700, 25 E. Washington St., as soon as possible after 10:30 A. M. and not later than 4 P. M."

These four specimens of urine having been secured, proceed to the test as follows:

Take four test tubes, about half an inch in diameter and about five inches long, and into each one measure 5 cc. of Benedict's solution. From each one of the four urine samples, take up urine with medicine droppers and add not less than 8 nor more than 10 drops of urine to each of the four test tubes containing the Benedict's solution. Mix the urine well with the solution in each tube and arrange them, in order, in the boiling water of a water-bath. Keep them in this boiling water for five minutes; then remove and let them cool spontaneously.

Reduction of the copper sulphate by the urine is shown, on cooling, by a change of appearance within the test tubes, from the bright-blue to a dull, cloudy, greenish, greenish-yellow, yellowish-red, red-brown or brown appearance and precipitate.

Reduction of the copper compound, in a solution containing copper sulphate of the highest purity, has been found, in my experience, to indicate the presence of more or less sugar in the urine, in a great majority of cases, always provided that my directions have been carefully carried out. Drugs taken by the patient may completely wreck the significance of the change, hence the importance of following my directions.

Still further and highly important: Given a person whose urine, tested as above, repeatedly shows reduction of the copper sulphate, restriction in the use of carbohydrates by this person will, in most cases, put an end to the reduction of the copper sulphate, shown by repeated testing.

Inasmuch as hundreds of persons have "passed" the test successfully, without reduction of the copper sulphate, when examined by me, is it not fairly safe to assume that anyone who cannot do so is "different," and that a clinical assumption of "carbohydrate intolerance" is warranted, in his particular case? Still further, if the reduction is plainly marked and unmistakable, then fermentation with yeast, if positive, will show the presence of sugar, when it is present in amount well

above any so-called normal figure. Upwards of one-quarter of one percent, found by fermentation, renders the glycosuria obvious. In such cases, timing will show that the Benedict's solution, in the water-bath, changes its color and appearance in one minute, or perhaps even less.

Whether the condition found is one of simple glycosuria or of diabetes mellitus can be determined by the clinician only after carefully conducted observation and scientific procedures. But, given a reduction of the solution, as above described, the patient may well be advised to throw away his noon-day straws and to "go slow" in eating articles containing a considerable carbohydrate percentage. Absence of the reduction of the copper sulphate, in cases where the amount of carbohydrate intake is lessened, takes place so regularly, in my experience, as to occasion no surprise. Moreover, testimony is frequently heard to the effect that the patient is conscious of "feeling better," after the test becomes negative.

Waiving entirely the question of a differential diagnosis between glycosuria and diabetes mellitus, the following cases, out of a multitude of experiences, may show the benefit derived from throwing away the straw.

Case 1: Seen first in 1890, the patient was a male about 30 years of age; rather stout; not inclined to exercise; general condition, good; clinical features, nil; in the habit of eating a carbohydrate luncheon.

I discovered, between 2 and 3 o'clock of an afternoon, that his urine contained sugar, fermentation showing several percent in the urine thus passed after luncheon. At other times in the day, the fermentation test was negative.

I have had this patient under observation for 40 years. During a period of 10 years the sugar disappeared, so he went back to carbohydrate luncheons and laughed at me. Suddenly sugar returned in quantity and it took several weeks of rather severe restriction to get rid of it. Since that time he has heeded my instructions, because he finds, whenever he does not do so, that sugar returns and is troublesome to get rid of.

Case 2: This patient was also a male and was under my observation for some 30 years, having come to me on account of chronic nephritis.

About 5 years ago I began to find slight

reductions of the copper sulphate, on testing and suggested care in use of carbohydrates. Other physicians differed with me, until finally I found the reductions of the copper sulphate so marked that I suggested careful general clinical procedures, which, being undertaken by the same physicians who previously had differed with me, resulted in their establishing the diagnosis of diabetes mellitus.

Diabetes mellitus is a deceptive condition, and it is well not to wear the "high hat" nor ignore the possibility of the presence of this condition, when the urine reduces the copper compound.

Case 3: This was another male, about 55 years of age, under my observation only three or four years, who came to me because he noticed that he was not so "peppy" as was necessary for carrying on his business. He feared Bright's disease. His general condition was good and clinical features nil.

I found between two and three percent of sugar and a trace of albumin, without casts, in his urine. Restriction of carbohydrates, daily walks in the open air and attention to bowel functions have brought about negative Benedict tests on most occasions, in the urine tested two hours after the noonday meal. Occasionally the test is slightly positive, due to his fondness for apple pie.

Case 4: Mr. K.; age about 50; weight 145; active in business and in general good health.

He has had a fondness for sweets all his life, especially for ice cream. He knows my ideas about carbohydrate intolerance and, being anxious to toe the mark in business, comes in two or three times a year for the Benedict test, as I use it. The test is always made about two hours after lunch.

When he first began coming in, marked reduction was noticed several consecutive times, but fermentation was negative. He became "wise" to his condition and, whenever the reduction is marked, he now restricts his carbohydrates until the test is negative. His weight does not vary and his physicians can find nothing significant by physical examination. Whenever he is careful about his diet, the reduction of the copper test is absent; and whenever he yields to the ice cream temptation, the reduction returns. It looks as if he had learned something about carbohydrate

metabolism. He is still under observation.

Case 5: This case illustrates the dangers of over-optimism. The patient was a male and was about 45 years old when I first saw him, in 1893.

Being offered a tempting but somewhat arduous position, he had himself examined by a number of physicians, and chose me to examine his urine. We had been friends since boyhood and I was distressed to find 4 percent of sugar in his urine, voided after lunch. On questioning, he admitted that he drank champagne for lunch daily. When I made my report, he averred that mine was the only unfavorable one; that several others, the so-called "best in Chicago," had found him in good condition. My report as to sugar I could see was not taken seriously by him, and I never saw him professionally again. Whenever I met him socially, he avoided the subject of his health.

He did a large amount of work, made a wonderful name for himself, developed, I am told, a well-marked case of diabetes mellitus, and has been dead for many years.

Case 6: A maddening example of the occasional futility of medical practice! The patient, about 60 years of age, a physician, sober, sagacious and thoughtful, astonished me one day by calling at my office and requesting me to put him on a diabetic diet, which I did, after assuring myself that he had plenty of sugar in his urine. He seemed grateful for the advice, wrote down my dietary with the utmost care, invited me to lunch with him and, when the waiter came, ordered carbohydrates right and left, ending up with ice cream and cake. I naturally remonstrated with him and suggested that he follow out the dietary I had given him. He smiled, with that self-indulgent smile I have learned to know so well in diabetics, and said, "Doctor, we can live only once." So that was that! Needless to say he did not round out his three score years and ten, missing it by many years.

Case 7: A middle-aged woman with a large amount of sugar in her urine, with whom I made a hit when I told her, politely, that she had forgotten to include ice cream, candy and fruit in the memorandum of her diet, which I always insist diabetic patients shall furnish, when they send in their urine. She "acknowledged

(Continued on Page 925)

CLINICAL NOTES AND PRACTICAL SUGGESTIONS

The Application of Psychology to Medicine

THE affiliation of psychology to medicine is a very intimate one, and the fact that many medical men have been rather valuable contributors to psychology is well known. Psychology has derived immeasurable benefit from researches carried on in clinics and hospitals, and within recent times Medicine itself has been rather fortunate in gaining some insight into some of its problems, through the activity of psychologists. Perhaps a notable instance in this line has been the work of Strong on the effects of hookworm disease on mentality. This, of course, impressed us with the necessity for early treatment of hookworm sufferers, and redoubled the activity of research in this direction.

Perhaps the earliest relation between psychology and medicine was through psychiatry. It is somewhat surprising, in view of this relationship, to find that, in the care of mental patients, psychologic laboratories have only rather recently been established as an integral part of the institutions leading in this field, but at the present time a psychologist is considered a necessary member of the staff of a modern mental hospital.

Another intimate relation between medicine and psychology is through psychotherapy. This science is essentially the treatment of disease by mental influences. At various periods in its development it bore a rather unsavory reputation. In the nineteenth century, particularly, hypnotism was rather extensively used, and offered fertile fields for the charlatan and faker to victimize the public. Within recent times, however, it has attracted men with

scientific training and the rigid mental attitude and has proved of real benefit in innumerable instances.

The treatment of disease by mental suggestion is by no means limited to hypnotism. The recent researches of Cannon, Crile and Kempf show very clearly the relation between psychologic reactions and the physico-chemical reactions of metabolism. This is especially so in the case of the emotionally-colored psychologic reactions. Cannon has pointed out the relation between these factors in the mechanical and chemical processes of digestion, while Crile has stressed, in addition, their influence on the organs which he groups together as the kinetic system. All these investigations, taken together, demonstrate the fine balance maintained between the reactions at the psychologic level and the more vital life processes.

During the War, occupational therapy attracted a great deal of attention, because it was then utilized in dealing with numerous war disabilities. Occupational treatment was most successful in those simple limb and joint movements which were above the sensory-motor level of reaction, when supplemented by motivation and psychologic supervision.

Another very subtle relation between psychology and Medicine is that, in the practice of medicine, there is a play of psychologic reactions between the physician and the patient.

Within the last several years, psychology has come to tell us much of prejudices and biases; and it is essential that the physician should understand his therapeutic and

diagnostic prejudices. He must, moreover, use his senses in diagnosis; but he must understand the many illusions of touch, sight and hearing.

Another application of psychology to Medicine is in those medical specialties which involve an extensive range of special abilities. Psychologic tests can be devised and standardized for these, as well as for typists, musicians, etc.

Medicine is more and more coming to recognize its social bearings, and for this reason psychology is coming to play a greater part in medical practice, in the prevention of disease, as elsewhere, in almost every instance where physician and patient come together.

EDWARD PODOLSKY, M.D.

Brooklyn, N. Y.

Cancer of Bone

WE ARE beginning to get some very encouraging figures. Before the discovery of the x-rays, no cases of cancer of bone were cured by amputation or any other treatment, because only the x-rays will detect malignant disease of bone in time for a cure by operation or radiation.

The people had to be told of the value of the x-rays. In 1921, the chances of a cure after amputation of the limb were less than five percent. In 1929 they are more than thirty-five percent. There has been no improvement in treatment by operation or radiation, but there has been a tremendous change for the better by the wide dissemination of correct information.

Children must be taught not to conceal pain in bone or joint. Whenever there is pain or swelling near a bone or joint, or a limp, or any loss of function, beware of looking upon it as "growing pain" or "rheumatism," or a "bruise" or a "charlie horse" or "neuritis." An immediate x-ray examination is necessary. Any change in the bone will be detected by this agency. The majority of diseases of bone, pictured by the x-rays in the earliest stages, are not cancer; but the larger proportion of these, if neglected, may not take the life of the patient, but will produce crippling, even to the loss of the limb. We are teaching people, now, the value of the x-rays for cancer, as we have taught them their value for a broken bone.

The deformities of rickets, knock-knee, bow-legs and other curvatures have prac-

tically disappeared, fortunately, before the fashion of short skirts.

Practically nothing is left of rickets, except the early formation of cavities in children's teeth. This will be wiped out when the expectant mother does not neglect the proper vitamins in her food. Food vitamins and sunlight prevent rickets.

The care and education regarding tuberculosis among adults, pasteurized milk and clean, chlorinated water have greatly reduced the incidence of tuberculosis among children.

Better care of the teeth and earlier removal of tonsils and adenoids, have made osteomyelitis a rarer disease.

The immediate detection of infantile paralysis, followed by lumbar puncture and the treatment by convalescent serum, have reduced the crippling from this disease more than fifty-five percent. The eradication of this crippling disease rests upon the discovery of its cause, prevention and treatment in the research laboratories of medical science.

Now we are reducing the fearful mortality of cancer of the bone by simply telling the people, through the daily press and other means of communication, of the importance of an immediate x-ray examination, the moment a child or adult has the least symptoms or signs of trouble in the bone.

JOSEPH COLT BLOODGOOD, M.D.

Baltimore, Md.

A Potent Analgesic*

THE following prescription has served in good stead in many cases of pain, in which nothing else than morphine would otherwise have given relief:

Patient's name _____ Date _____
Patient's address _____ Patient's ailment _____

R

Extract hyoscyamus.....0.15
Codeine phosphate0.30
Phenobarbital0.30
Amidopyrine3.00

M. & div. into 15 caps.†

Label: One every 2 to 4 hours as required.

Doctor's signature and address _____
Registration number _____

* Reprinted from *Bul. Chicago M. S.*, Aug. 9, 1930.
† In a metric prescription, written like this, each capsule contains the same number of grains as there are grams in the entire prescription.—Ed.

This prescription must be written in ink to meet the requirements of the Harrison Law.

One would, of course, not resort to such a complex combination when any one or two of the ingredients suffice to secure the desired result. Thus, most ordinary headaches respond to a 0.30 gm. (5 grain) dose of amidopyrine. Many pains are relieved by a combination of phenobarbital and amidopyrine that would not be as well relieved by either of them alone. But in cases that resist this combination, as in severe neuritis or in other painful conditions due to organic disease, the addition of codeine greatly enhances the analgesic power and without introducing the undesirable effects of morphine. In cases of colic; e. g. gallstone or renal colic, the addition of extract of hyoscyamus still further is of help. The combination has served well in cases of **inoperable carcinoma**.

We have here a combination, each of the ingredients of which acts in a different way in relieving pain; and it is now a well recognized theory (Bürgi's "Law") that when we combine agents that produce a certain effect by affecting different structures, we secure potentiation; while when we combine agents that produce the effect by acting upon the same structure, we merely obtain addition effects. Thus, combining several agents of the coal tar series; e.g. a full medicinal dose of acetanilid and of acetphenetidin, merely amounts to a double dose of either, as far as favorable and unfavorable effects are concerned. In the combination given above, each agent acts in a different manner in relieving pain; and the clinical results justify the assumption that we have here an illustration of "Bürgi's law."

The doses in the prescription given are rather small. Doubling the dose of any or all the ingredients has caused, in some cases, unfavorable effects, such as dizziness, dryness of the mouth, sleepiness. If the pain is not relieved within an hour, the patient may repeat the dose. Indeed, if required, a third dose may be given after the lapse of another hour. Not more than three doses should, however, be given at such short intervals. After this, giving a dose every 2 to 4 hours will have to suffice. If a patient who is suffering from a chronic painful condition; e. g. inoperable car-

cinoma, regularly requires two capsules for relief, then a capsule of double size should be prescribed. If the patient has a productive cough, the codeine should be omitted as it might check the cough, cause retention of secretion, and aggravation of the bronchial or pulmonary condition.

This flexibility and adaptability of such prescription, written to meet the requirements of the patient, should suffice to show the superiority of extemporaneous prescribing. Patients have a right to expect such ability from us.

B. FANTUS, M.D.

Chicago, Ill.

Imperforate Anus (A Successful Operation)

While serving my apprenticeship with a surgeon, I saw a case identical with the one described by Dr. Smith in the October 1930, *CLINICAL MEDICINE AND SURGERY*, on page 778. Examination seemed to show that the external sphincter was intact, so when the infant was only a few days old, an operation was performed, as follows:

A grooved director was inserted into the fistulous opening in the perineum and carried back to the point where the anal structures could be felt, and the tissues external to the director were incised. This allowed a profuse discharge of meconium, after which the wound was cleansed; the skin around the anus was sutured to the external sphincter; the incision in the perineum was closed; and a soft-rubber catheter was inserted into the rectum.

I have never seen this patient since the operation, but have been informed that healing took place and that the anus is continent.

AUGUST HELMBOLD, M. D.

Ft. Thomas, Ky.

(Let Well Alone)

The cases of imperforate anus which I have seen had no sphincter control, even though they have been operated upon. In fact, I have never seen a case that had any real sphincter. Where is the sphincter if the proctodeum does not ascend to meet the hind-gut?

An artificial anus can be made through the anal region, and when no diarrhea is present, there will be fair control, just as a woman with a repaired levator ani muscle

will have fair control, even though the sphincter is torn.

Why change the present slit, left by nature (in Dr. Smith's case), to another, made only slightly posterior to it? What difference does it make where the artificial opening is in the perineum? Not seeing the case, it is impossible to say what should be done, if anything. It seems most probable to me that nothing should be done.

M. O. ROBERTSON, M.D.

Bedford, Ind.

(Further Comments)

I recently saw the patient with imperforate anus, whose case was reported in the October CLINICAL MEDICINE AND SURGERY, page 778, and found the child doing well. His bowels are moving freely, and, of course, he could not be expected to exercise any control over them at the age of four months.

In my report I stated that there was no anus, but this is a mistake. There appears to be a complete anal structure, except that there is no external opening—not even a dimple to show where the orifice should be.

I hope that Dr. Drueck is right and that this defect can be corrected later.

J. R. SMITH, M.D.

Warsaw, Mo.

Condensed Milk (Sweetened)

WHAT IS commonly known as "condensed milk" is sweetened condensed milk; evaporated milk is unsweetened condensed milk.

Condensed milk is usually made by heating fresh milk to a temperature of 180° to 200°F., which destroys most of the bacteria, yeast, molds, and other organized and unorganized ferments, and facilitates further processing. Cane sugar is then added, in the proportion of about 18 to 20 pounds to every 100 pounds of milk. When the sugar is dissolved the mixture is run into vacuum pans and evaporated at a temperature of 130° to 150°F. until the desired concentration is reached. It is then cooled and run into cans. It is not sterilized, but is preserved by the high sugar content (about 42 to 46 percent).

Since the heat used in the entire process is below the boiling point and since it is

applied for a relatively brief time, the more resistant forms of organisms may persist, though they do not grow or multiply in milk properly selected and properly canned.

There is experimental evidence that the vitamin value of condensed milk has suffered little injury, if any, during the process of evaporation. Some antiscorbutic value (due to Vitamin C) has been found to be retained in condensed milk. Its presence depends partly on the antiscorbutic value of the raw milk used for canning, which depends, in turn, upon the feeding of the cow.

Sweetened condensed milk has been used in the feeding of infants for several generations and has also been of considerable use in the general nourishment of the family. As an infant food it has the drawback of an enormously high sugar content. With a 42 to 46 percent proportion of sugar (sucrose), condensed milk must be so diluted, for the average infant, that the percentage of the other ingredients of the original milk is brought below the proportions best adapted to growth and development, if human milk is taken as the standard.

As, usually, 2 tablespoonfuls of condensed milk is diluted with two-thirds of a cup of water to give the equivalent of a glass of milk, it is obvious that, as far as growth food is concerned, there can be no comparison between the value of an equal number of calories in the fresh milk and in condensed milk. Cane sugar is not equivalent to either protein or fat, and when it replaces these substances in milk, the content of calcium and other minerals is also lowered.

If the sugar content is left high by diluting condensed milk less, bad results from the intake of too much sugar may occur. Children who apparently thrive on condensed milk—that is, who can stand a great deal of sugar—are not found, as a rule, to have good muscular development. Though some of them are fat, owing partly to excessive water retention, they are flabby and pale and do not have the average resistance to disease. For babies, condensed milk is a safe food for a very short time only. Experiments with animals also tend to prove the relative inadequacy of condensed milk as the sole food for the young.

Condensed milk is not sterile; it may spoil if it is left open to the air or if not

kept iced; and it should be used soon after being opened. These are additional reasons why condensed milk is not a safe food for infants, in the hands of the average mother, without medical supervision. Condensed milk may sometimes be given to infants—in certain emergencies, or by direction of a physician, or as an occasional food, if cod-liver oil and orange juice are also given. A physician should be consulted as to its use.

DOROTHY R. MENDENHALL, M.D.,
Washington, D. C.

Error in Abstract

Our attention has been called to the fact that an error was made in the abstract of De Takats and Quint's article on "The Injection Treatment of Varicose Veins," which appeared on page 785 of the October, 1930, issue of *Clin Med. and Surg.*

The solution mentioned in the second paragraph should be equal parts of 50-percent dextrose and 30-percent (instead of 50-percent) sodium chloride solutions, mixed in the syringe and used in the larger, thickened veins. Where less irritation seemed necessary, two parts of the dextrose and one of the sodium chloride solutions were used.—Editor.

Error by an Advertiser

An advertiser in CLINICAL MEDICINE AND SURGERY, the Phenol Laboratory, has made unfounded statements in circulars sent out to physicians, to the effect that an article dealing with their products, and also an editorial recommending them, were appearing in the reading pages of this journal. No such article has been accepted for publication and Dr. Lake has never even contemplated the writing of such an editorial.

Before accepting the advertising of the Urocit outfit, a rather hurried test was made by a competent uranalyst, to determine the soundness of the claims made, and he reported that the reagents were reasonably satisfactory for bedside diagnosis.

In view of what has happened, careful tests of these methods will be made and, if

the report is unsatisfactory, the advertising will be discontinued.

(Continued from Page 920)

the corn" and admitted I was right, but never consulted me again.

I met her once on a train, and she astonished me by introducing me to a friend as "a doctor who does not believe a word his women patients tell him"!

We read about the "deadly pyridine bases" and the havoc wrought by addiction to drugs containing them, but there are other "addictions"; that is, habits of diet, so ingrained as to become virtually food addictions, which more slowly undermine the health. In many cases it is unnecessary to impose general restriction of carbohydrates upon the patient, because he virtually does that himself, when he gets all his carbohydrate from the constant surplus ingestion of some one carbohydrate article. Men who almost live on pie, and women who eat toast and little else, are familiar examples. In such cases, broadening of the diet, so as to include fresh vegetables, especially those of the 5 and 10 percent carbohydrate class, may lessen the craving allayed by pie and toast. To remedy carbohydrate intolerance, we must concentrate our efforts chiefly upon the noon-day meal, as pointed out by Dr. Purdy many years ago.

The conclusion I have arrived at from these cases is that, in treating carbohydrate intolerance, we must make the patient become accustomed to foods he does not like. Calories and carbohydrate percentage figures carry little weight, when they conflict with likes and dislikes. Few there are, in this condition, who can be implicitly trusted to eat what they don't like to eat. It is fairly safe to govern the prognosis by the trustworthiness of the patient, "checked" by the family. As Dr. Purdy, quoting Dickinson, remarked in his book on diabetes, "The mind deteriorates, as well as the body, and the diabetic becomes deceitful in small matters." The discovery of insulin has been a blessing to these poor unfortunates who are slaves to a craving they cannot be depended upon to resist.
25 E. Washington St.

THE LEISURE HOUR

Miracles



Give us a miracle, the people cry—

Manna from heaven to feed our famished faith,

Water made wine, a tomb despoiled of death,

A flaming bolt from clear Damascus sky.

There are no miracles, the wise reply;

All things abide the law, events their cause,

And over all the ultimate Law of Laws.

Nothing at last escapes man's how and why.

O fools and slow of heart, not to perceive

That Life Itself transcends the mysteries

Which Life Itself creates; not to recall

How once they heckled Him who bade "Believe,"

Clamoring for signs, nor saw before their eyes

HIMSELF, the greatest miracle of all!

THOMAS G. ATKINSON.



A Ditty by a Doctor*

(Written in the Prospect of a nice
Unhealthy Winter.)

*Copied exactly from *Harper's Weekly* (Humors
of the Day), Jan. 12, 1861.

Hurrah! 'tis drear December,
It snows and blows like fun;
Abroad is influenza
As sure as any gun:
The fogs are growing yellow;
There's jaundice in the air;
And ague, cramp, and asthma
To earth will soon repair.

Chorus: All among the bottles
Who would not be gay?
While physic for some throttles
Is wanted more each day!

The spring is not a bad time,
When hooping-cough it brings;
The summer is a glad time,
With fever on its wings;
If autumn be but sickly,
Our profits are not small;
But in winter far more thickly
Complaints around us fall.

Chorus. So, all among the bottles, etc.
—Author Unknown.

The Children's Friend

A well known bishop was very fond of
children and set out one night to attend a
party given "by the children for children."

"Don't announce me," he said to the
servant.

Leaving his coat and hat downstairs, he
quietly opened the drawing-room door,
where the buzz of voices announced the
presence of company. Dropping on his
hands and knees he entered, making strange
noises distinctly resembling the neighing of
a horse. Aware of a dead silence, he looked
up, and found the guests assembled for an
eight o'clock dinner regarding him with dis-
gust, not unmixed with alarm.

The children's party was next door!

American Stories.

Postanesthetic Mania

"What a horrible noise comes out of that
radio set!"

"Well, I guess you'd make just as bad
noise if you were coming out of the ether."

—Radiological Review.

"See that dignified, gray-haired lady over
there?"

"Yeah, who is she?"

"That's Madame Curie."

"Madame Curie?"

"Sure, the woman who invented the
radio.—*The New Yorker*.

"I guess I have lost another pupil," said
the professor as his glass eye rolled down
the kitchen sink.

Judge: "Gentlemen of the jury, have
you come to a decision?"

Foreman: "We have, Your Honor. The
jury all of the same mind—temporarily
insane."

I'll Say We Do

The rose is red, the violet blue,
This little bill is overdue.

Please pay it now, don't wait till when
The rose and violet bloom again.

For if you do delay it thus,

No rose or violet blooms for us.

Unless you pay, the rose will rest

Upon our fair and manly chest.

The birds will sing, but what of that?

We will not hear them where we're at.

So come across, we need the dough.

Not in the spring, but NOW, you know

The rose is red, the violet blue.

Do we need cash? I'll say we do!

—Author unknown.

Champion Cow

Teacher: What cow is best known for
the amount of milk it gives?

Johnny: Magnesia.

Teacher: Magnesia?

Johnny: Yessum, all the drug stores
sell milk of magnesia.—Patchwork.

Diagnostic Pointers

Sciatic Pain

The following characteristics will distinguish sciatic neuritis from sciatic pain due to other causes: Sciatic neuritis: great pain; extreme tenderness of the nerve (except when intrapelvic and out of reach of the finger *per anum*); wasting of all muscles; cramp and fibrillation; paraesthesia, tingling and numbness, but no loss of sensation as a rule; knee-jerk, plus and ankle-jerk, minus or lost.

Sciatic pain due to other causes: Pain is less severe as a rule; the nerve trunk is much less tender; much earlier paralysis and loss of sensation; ankle-jerk preserved.

Varicose veins occasionally cause sciatic pain. Pain in the distribution of the sciatic nerve below the knee is always secondary or toxic—very frequently diabetic; pain referred to the groin, is suggestive of osteoarthritis of the hip.

Frontal Sinus Inflammations

Practically all cases of acute frontal sinus inflammation will recover under conservative treatment, even if the symptoms are very trying; this is true also of most chronic cases.—DR. L. H. KLEMPER, Seattle, in *Northwest Med.*, Feb., 1930.

Prodromal Rashes

The prodromal rashes of smallpox may be either local or general; the general rashes are usually erythematous; the local are usually petechial. In dealing with generalized erythematous rashes, the morbilliform is not of so severe a significance as the scarlatiniform. In the case of local triangular rashes, their prognostic portent depends upon their intensity.—DR. E. SWAINSTON, in *Practitioner*, Lond., May, 1930.

Renal Glycosuria and Diabetes

The long continued study of a patient whose condition was eventually diagnosed as renal glycosuria showed: Sugar in urine but no signs of diabetes; daily blood-sugar normal, in the fasting state; blood-sugar curve after glucose (dextrose) ingestion, normal; no relation between the amount of sugar ingested and excreted; no polyuria, and respiratory metabolism normal.—DR. I. M. RABINOWITCH, Montreal, in *Canadian M.A.J.*, Mar., 1930.

Meningo-Encephalitis

Meningo-encephalitis may appear as a complication of mumps. Its symptoms usually consist of a rise in temperature, headache, nausea and vomiting, stupor, prostration, nervous hyper-irritability and, at times, sensory disturbances (deafness, aphasia). There may be a positive Kernig sign and neck rigidity. Usually the spinal fluid findings are positive; there is a slightly cloudy fluid with increased pressure and a cell count of 20 to 2,000, with a predominance of lymphocytes (80 percent or more). There may be a leukocytosis, up to 18,000, with increased lymphocytes. No microorganisms are found. The treatment is spinal drainage.—DR. E. E. ZEMKE, in *Minnesota Med.*, Feb., 1930.

Non-Venereal Epididymo-Orchitis

Inflammation of the epididymis and testicle may occur as the result of traumatism, hematogenous infection complicating a number of infectious diseases, from a distant focus of infection, or it may be toxic in origin.—DR. J. G. CLEM, Louisville, in *Urol. & Cutan. Rev.*, Mar., 1930.

Current Medical Literature

The Prophylactic and Therapeutic Effects of Viosterol (Irradiated Ergosterol)

An intensive clinical study of the prophylactic and therapeutic value of Viosterol (irradiated ergosterol) was undertaken by Drs. J. H. Hess, H. G. Poncher, M. L. Dale and R. I. Klein, of Chicago, to elucidate the following problems: (1) The determination of the amount of irradiated ergosterol necessary to prevent rickets in infants during the first year of life, when its administration was started in the first weeks of life; (2) the determination of the therapeutic dose in rickets; (3) the possible development of toxic symptoms due to overdosage; (4) the possible advantages, if any, to be gained by the feeding of vitamins A and D in combination, against D alone in addition to that in foods. Complete clinical laboratory and roentgenographic studies were made in all cases.

The investigation was made in 142 new-born infants, delivered in the department of obstetrics at the University of Illinois Research and Educational Hospital, the infants and mothers being under constant supervision for a year following birth; also in 17 cases of established rickets, either received from outside the hospital or which developed in the infants under observation.

The results established by the authors, given in *J.A.M.A.*, Aug. 2, 1930, are as follows:

1.—*Determination of the Prophylactic Dose:* Several factors must be given due consideration in the determination of the prophylactic dose. It is obvious, from our knowledge of the pathogenesis of rickets, that insufficient mineral deposition during fetal life, as seen in twins and premature infants, rapidly growing infants and babies with repeated infections and diarrhea, must be given special consideration. From our blood chemistry determinations, 10 drops of viosterol in oil a day was the smallest dose that prevented a fall in both calcium and phosphorus from the first to the later months of the first year of life, though in two cases presenting diarrhea and infection, even 20 drops daily was inadequate to prevent a fall in calcium and phosphorus. No infant on more than 10 drops of viosterol in oil daily developed clinical, roentgenographic or blood-chemistry evidence of rickets.

From these facts we may conclude that, for the average normal infant from birth to 1 year of age, under varied environmental and seasonal conditions, in the temperate zone, 10 drops of viosterol in oil a day is the minimum dose for prophylaxis. It should be started during the first weeks of life.

2.—*Determination of the Optimum Dose for Therapeutic Purposes:* It is impossible to draw conclusions as to the optimum dose from the small group observed. The degree of rickets must be considered in every case. We found that mild rickets will frequently heal on from 10 to 15 drops of viosterol in oil daily, while other cases, more advanced, will require larger doses. In some severe cases, 15 and even 20 drops did not prove adequate. Infants on 30, 40, 50 and 60 drops showed uniform healing, clinically, chemically and by roentgenogram.

We have attempted to compare the actual time of healing in rachitic infants treated with viosterol in oil and the results obtained by others. But such factors as season of the year, degree of rickets, difference in strength and dosage of the product used must be carefully evaluated before a suitable basis of comparison is obtained. In the small group of cases studied, the average time required for demonstration of healing in the roentgenograms and definite blood-chemistry changes was about twenty-eight days. This approximates the average time reported by other observers.

3.—*The Effect of Massive Doses of Viosterol in Oil:* Toxic symptoms were not observed in any of the infants during the period of investigation. We do not wish to conclude from this that toxic symptoms cannot be produced by large enough doses of viosterol in oil. This investigation does show, however, the large factor of safety in the administration of larger doses of viosterol to infants, at least over limited periods of time.

4.—*The Possible Advantages in Feeding Vitamins A and D (Cod-Liver Oil), as against Optimum Amounts of Vitamin D Alone (Viosterol in Oil):* No important difference in development was noted. The results must be limited to the period of observation; that is, from birth to 1 year. What effect this difference in feeding would have on subsequent development was not determined in this investigation.

Status of Nonspecific Therapy

The Frank Billings Lecture 1930, by Dr. J. L. Miller, of Chicago, on the present status of non-specific therapy is given in *J.A.M.A.*, Aug. 16, 1930.

Dr. Miller refers to the numerous substances listed under protein therapy which have the common property of causing a marked febrile reaction; it is believed that this reaction promotes the mobilization of both specific and nonspecific immune bodies. It is quite probable that the body has a reserve store of nonspecific antibodies for emergencies.

Protein therapy has been employed in nearly

all acute and chronic diseases of supposed bacterial origin. Malarial inoculation has been used with success in psychiatric patients, especially those with dementia paralytica. The number of recoveries reported from malarial treatment varies from 30 to 40 percent. Dr. Miller finds, from a survey of the literature, that in this neurologic malady (and probably others) nonspecific therapy deserves continued trial. If the treatment is begun early, before irreparable tissue changes have taken place, complete recovery may be possible.

Regarding chemotherapeutic agents, Dr. Miller states that there is a growing belief that these do not act directly, as was originally believed, on parasites, but as cellular stimulants, resulting in the production of something that destroys the parasites. A number of observed facts are cited in support of this view. Moreover the varying activating power of organs might explain the selective action of the drug. Ehrlich and his followers succeeded in making a number of arsenical preparations, as well as dyes, which were effective in specific conditions. No one questions the value of these agents, but doubt is cast on the hypothesis of the mode of their action. The mode of action is probably akin to that of non specific protein therapy.

Intravenous Anesthesia With Barbiturates

In *Anesth. & Analgesia*, Sept.-Oct., 1930, Dr. J. S. Lundy, of the Mayo Clinic, reports his observations on the intravenous, oral and rectal use of certain derivatives of barbituric acid in the induction of surgical anesthesia, either alone or for preliminary sedation before the induction of gas anesthesia, or local anesthesia.

Nembutal "844" (Abbott) (sodium ethyl 1-methyl butyl barbiturate) has been used 403 times: intravenously in 52 cases; orally in 336 cases; and rectally in 15 cases.

Dr. Lundy has found that, compared with other barbiturates, Nembutal has certain advantages; it is essentially antispasmodic and sedative and differs from sodium-Amytal in that there seems to be less delirium incident to its use and that an effect equivalent to that of sodium-Amytal can be produced with about half as much of it. The period of recovery, therefore, is about half as long as that following the use of sodium-Amytal and there seems to be much less restlessness.

The average dose of Nembutal used has been 3 to 5 grains (0.2 to 0.3 Gm.), injected intravenously in from 3 to 5 minutes. It seems to be particularly valuable in preparing patients for operation, and satisfactory sedation has been obtained by administering $1\frac{1}{2}$ to 4 grains (0.097 to 0.24 Gm.) by mouth, with morphine hypodermically, about 35 to 45 minutes before operation. This preliminary medication has been satisfactory, regardless of whether the final anesthesia was local, general or both.

Nembutal is advantageous when it is desirable not to have a prolonged barbituric effect, as in surgical cases. When sedation is the most important factor, as, for instance, in preparing

patients for operation on the thyroid gland, Nembutal seems to have advantages over sodium-Amytal. In connection with local anesthesia, it is definitely advantageous to avoid delirium, and the use of sodium-Nembutal is particularly desirable.

Dr. Lundy has used Nembutal with satisfaction in connection with many of the general and local anesthetics. Its use seems to allay fear. Preliminary medication with it should be begun the night before the operation. Dr. Lundy believes that such a procedure would materially reduce the morbidity, if not the mortality, incident to the administration of general anesthetics and possibly of local anesthetics.

Prevention and Treatment of Common Colds and Pneumonia

In *M. J. & Record*, Mar. 19, 1930, Dr. C. Gluck states that the common cold is nothing more or less than an acute attack of sinusitis, involving principally the posterior and anterior ethmoid sinuses; also a pansinusitis is essential for the production of acute pulmonary inflammation.

Antisepticizing treatments should be employed at the first inkling of a cold. The basis of the treatment consists of a vigorous spraying with bichloride of mercury solutions in varying strengths (1:5,000 to 1:1,000).*

The treatment is divided into three steps: First, the anesthetizing and opening of the nasal fossae by the use of a solution of cocaine hydrochloride and epinephrin chloride; second, the cleansing of the nasal fossae by suction; etc.; any pus or debris on the tonsils or gums should also be removed; third, thorough spraying of the entire nasal fossae, tonsils and gums with the bichloride of mercury solution.

One or two such treatments should suffice; but if the patient is not relieved it means that there is much free pus in the maxillary sinuses as will be found following testing with a Coakley trocar. These sinuses must be opened with a Boettcher or Wilder antrum rasp or punch and sprayed out with a bichloride of mercury solution, using a No. 56 De Vilbiss spray bottle with a 4-hole spray tip, bent to a maxillary sinus curve. These sprayings should be carried out four or more times daily, depending upon the symptoms.

Leukocytosis and Differential Count in Pneumonia

Analysis of 100 cases of non-fatal and 60 fatal cases of lobar pneumonia, as reported by Dr. R. Middleton and J. H. Gibbon, of the Pennsylvania Hospital, in *Am. J. M. Sc.*, July, 1930, leads them to the following conclusions in regard to the prognostic value of the initial leukocyte and differential count in lobar pneumonia:

1.—Absence of leukocytosis is an unfavorable and leukopenia an ominous sign in lobar pneumonia. A high total leukocyte count, especi-

*Metaphen 2500 should prove more effective and satisfactory than the bichloride solution.—Ed.

ally 20,000 per c.mm. or above, is reassuring.

2.—Suppression of the total lymphocyte count below the low normal of 1,200 per c.mm. is of bad import, having been noted in over half of the fatal cases.

3.—Among 100 patients who recovered from pneumonia, 68 percent had negative indexes of resistance at the initial blood count. A negative index of resistance cannot therefore be regarded, *per se*, as alarming. Nevertheless, a very low index of resistance is unfavorable.

4.—A slight alternation of Walker's formula* is suggested, with the object of making it express more nearly the idea for which he designed it.

5.—The specific nature of the body's response to various types of infection makes caution necessary in drawing prognostic conclusions from differential counts.

6.—The initial total leukocyte and differential leukocyte counts are frequently useful in the prognosis of pneumonia. Paradoxical results are sufficiently common, however, to discourage undue dependence on their prognostic significance.

Early Diagnosis of Whooping Cough

No serious contagious disease of childhood is diagnosed with more uncertainty and tardiness or is more frequently left undiagnosed than is pertussis. As a rule, diagnosis is delayed until the "whoop" is well established.

In *J.A.M.A.*, July 26, 1930, Dr. L. W. Sauer and Leonora Hambrecht, of Evanston, Ill., state that the cough-plate is the best means of early diagnosis. An analysis of 200 cases seen in private practice shows that the plate was positive in all but one of 53 patients, in the catarrhal stage; in 70 of 107 in the paroxysmal stage; and in none of 40 in the decline period.

The medium used for the cough plate is easily made. To 500 Gm. of peeled, sliced potatoes, 40 cc. of glycerin and 1,000 cc. of distilled water are added. This is boiled until the potatoes are soft, the water lost by evaporation replaced to the original weight and the mixture strained through gauze. To 500 cc. of this filtrate, 1,500 cc. of 0.6-percent salt solution and 60 Gm. of agar are added. Adjustment is made to the original weight and the mixture is bottled in 150 cc. amounts, autoclaved and stored in a refrigerator. The melted contents of a bottle is added to 30 cc. or more of defibrinated blood and plates are poured so that each petri dish contains not less than 20 cc. of medium.

Proper exposure to the plate is of the greatest importance. The cough desired is one of the expulsive type, from the bronchi rather than the throat, and if such a voluntary cough cannot be elicited it must be provoked.

Plates should be incubated in an inverted position within a few hours after exposure. The incubated plate should be examined for colonies of *B. pertussis* at the end of the second day. If they are very numerous they may be seen as minute, glistening, mercury-like

droplets, amid the larger saphrophitic colonies. By the end of the third or fourth day, as a rule, they will have more than doubled in size.

The chief value of the early diagnosis is that the patient and susceptible exposed children may be quarantined.

The Leukocyte Count

An investigation of a large number of healthy individuals showed that the leukocyte count was between 5,000 and 6,000 per cubic millimeter, and that this basal count is constant from day to day.

A basal count of 7,000 or over, in normal subjects, is evidence of mental or physical unrest or discomfort.

The largest possible meal will not cause the slightest increase in the basal leukocyte count—a crucial disproof of the existence of digestive leukocytosis.

Passive or active postural changes raise the count instantly. An activity level from 60 to 100 percent above the basal level is thus attained with fluctuations, the extent of which depend on the variations in muscular and mental activity. The changes are referred, in general, to circulatory shifts, with the liberation of leukocytes trapped in unused capillaries.

The possibility of fluctuating differences in the leukocyte count, due to physical and metabolic activities as well as emotional states, emphasizes the necessity of taking these into account in all leukocyte counting. There are many factors other than disease *per se* that can produce significant physiologic fluctuations of considerable magnitude.

Only by adopting some "basal norm" as is done in the clinical study of metabolism, can error be entirely avoided.—Editorial, *J.A.M.A.*, July 26, 1930.

Mercurial Ointment in Treatment of Syphilis

Following experimental investigations of the use of mercurial ointment in syphilis by Drs. H. N. Cole, T. Sollmann and Nord Schreiber, as described in *Arch. Dermat. & Syph.*, Mar., 1930, these authors reach the following conclusions:

1.—The absorption and excretion of mercury after inunction are directly dependent on the concentration of the metal in the base. Observations on 5 percent, 25 percent and 50 percent preparations show that the excretion is about in proportion to the concentration in the ointment used.

2.—Mercury in an oleate base does not seem to be much more absorbed than in the ordinary benzoated lard and suet base. Probably there will be as good absorption from an old official mercury ointment as from a fresh preparation, and vice versa.

3.—Colloidal mercury ointments show no greater excretion of mercury than official mercury ointments of equal concentration in benzoated lard. Salivation is possibly more frequent with the colloidal preparation.

4.—Fifty percent mercury in a stiff petroxolin base shows no especial difference in the

*Walker's formula is as follows:

$IR = (T - 10) - (P - 70)$, where IR is the index of resistance; T, the total leukocyte count expressed in thousands; and P, the polymorphonuclear leukocyte percentage.

excretion of mercury from that when simple inunction of 50 percent mercurial ointment is used.

5.—Massive or intensive weekly inunctions of a 30 percent mercurial ointment, total 9 gm. metallic mercury, give an equal or higher excretion of mercury than the simple daily 50 percent mercurial ointment, 50 percent clean ointment or daily intramuscular injection of bin-bromide of mercury.

When Antivivisectors Flourish*

In an address delivered at the opening of the Department of Research in Animal Genetics at Edinburgh University, and published in *Brit. M. J.*, July 5, 1930, Sir Edward Sharpey-Shafer drew attention to the serious handicap under which British hospitals are working, as a result of the legal restrictions on animal experimentation. "Even when the hospital possesses a well equipped laboratory, experiments upon living animals, whether for diagnostic purposes or not, are usually barred by the authorities responsible for the administration of the hospital." It is not that legal permission is unobtainable, but that an application for permission would be noted by the fanatical antivivisectors, who would surely do their best thereafter to damage the subscription lists of the hospital. Samples of blood, of morbid growths or of urine destined for animal inoculation must, therefore, be sent out of the building. The Animal Research Institute, although designed for pure research, is actually the only institution in the country which undertakes the Ascheim-Zondek test for pregnancy. The law lays down no restriction on poisoning, drowning or trapping vermin, yet the hypodermic injection of a mouse is a matter for deluge of antivivisectional tears. Thus organized ignorance triumphs over humanity and common sense.

Prophylactic Value of Convalescent and Immune Measles Serums

An opportunity was presented among Porto Rican children, to study the relative prophylactic value of convalescent, as compared with adult immune, measles serum. The results, as given by Drs. E. G. Morales and O. C. Mandry, of Porto Rico, in *Am. J. Dis. Child.*, June, 1930, are as follow:

1.—The prophylactic use of convalescent measles serum, with good results, has been reported by various investigators.

2.—The use of immune adult serum in the prophylaxis of measles has also been encouraged, but little evidence is found in the literature regarding the true value of this agent.

3.—Of 120 children exposed to measles by familial contact and immunized with convalescent serum, 102, or 85 percent, were completely protected. Fourteen of the eighteen attacked in this group developed attenuated measles.

4.—Of 132 children also exposed to the disease by familial contact and immunized with doses from 20 to 40 cc. of immune adult serum, 108, or 80.3 percent, received complete protec-

tion and twenty of twenty-six, or 76 percent, of those attacked, developed attenuated measles.

5.—Doses of 10 and 15 cc. of adult serum gave complete protection in less than 50 percent of the persons immunized, but usually resulted in an attenuated or mild form of the disease.

6.—Of 183 untreated children (controls), living in the same houses with patients who had clinical cases and with treated children, only thirty-four, or 18.6 percent, failed to contract the disease.

7.—Only two children had mild reactions, among more than 500 who received treatment with serum.

8.—It appears likely that a serious obstacle to the widespread use of convalescent serum will be the objection of some parents to the immunization of their children with serum obtained from strangers.

9.—Immune adult serum is readily and universally available, and the technic for obtaining it from adults or children who have had the disease is simple and does not involve any risk.

10.—Immune adult measles serum should be used with greater frequency for the protection of exposed children, especially for debilitated children, who probably may die from the disease.

Prognosis of Primary Pleurisy With Effusion

It has been stated that at least 75 percent of the causes of idiopathic pleurisy with effusion are of tuberculous origin; some even contend that they are all of tuberculous origin.

As reported by Dr. F. W. Gaarde, in *J.A.M.A.*, July 26, 1930, a study of 126 cases, observed in the Mayo Clinic, shows that, if a patient survives the original acute attack of pleurisy with effusion, there is a good chance of complete recovery. If he survives the first three years, and particularly the first five years, his chances are excellent for complete recovery. Of the 126 cases under study, approximately 64 percent recovered.

It is clear from the study of these cases that idiopathic pleurisy with effusion should be treated as tuberculosis, with months of rigid regimen, rest and the methods usually applied in the treatment of that disease. If this is done, rather than to allow the patient to return to work when he has recovered from the acute symptoms, the prognosis will be much more favorable.

The Anesthetist as Internist of the Surgical Team

In *Anesthesia and Analgesia*, May-June, 1930, Dr. E. Klaus, of Cleveland, points out the advantages, for small hospitals, of having a part-time practitioner-anesthetist, who also acts as internist of the surgical team. Only such anesthetists are in a position to evaluate pre- and post-operative risks, gaging vital depression and providing remedial therapy.

It is quite obvious that the general practitioner-anesthetist, who will bring all the recent tests for evaluating risk to bear upon the work of his surgical team and who will base the patient's preparation, protection and after-care

* Reprinted from *J.A.M.A.*, Sept. 13, 1930.

on the results, will do more than anyone else in fostering the new era of physiologic surgery and in reducing surgical mortality and morbidity to the vanishing point.

Bismuth in the Treatment of Syphilis

Since the introduction of bismuth in the therapeutics of syphilis, nine years ago, it has, according to Dr. C. Levaditi, in *Am. J. Syphilis*, Apr., 1930, proved itself more efficacious and more suitable for administration than arsenic.

For many reasons the author thinks the practitioner should avoid, as far as possible, the use of the bismuth derivatives soluble in water. The insoluble salts of bismuth, in suspension in oil, and the fat-soluble compounds are preferable. The insoluble bismuth derivatives have the advantage of being well tolerated, of leading to no serious complication, and above all of forming deposits from which the organism prepares the veritable curative principle (bismoxyl), a proteobismuthic derivative, strongly spirocheticidal.

The fat-soluble bismuth derivatives are superior, through their rapid absorption, thus having a rapid treponemicidal action approaching that of the arsenobenzenes, but at the same time forming deposits, veritable sources of the therapeutic factor, assuring a profound and prolonged curative action. The fat-soluble bismuth forms a link between the soluble bismuth salts and the insoluble derivatives. Its spirocheticidal action is more prompt than that of the insoluble bismuth compounds, owing to the instantaneous absorption of a certain quantity of fat-soluble bismuth.

Cases of primary or secondary syphilis, treated during the first few months of the infection, have a negative Wassermann reaction in at least 75 percent of the cases, two months after beginning the treatment.

Golden Rules in Gas-Oxygen Anesthesia

In *Anesthesia & Analgesia*, Mar.-Apr., 1930, H. M. Seldin, D.D.S., chief of the department of general anesthesia, New York University College of Dentistry, mentions the following among other golden rules to be observed in giving gas-oxygen anesthesia.

The patient is and must be the sole guide in anesthesia, and not the machine.

The anesthetist should endeavor to remove all fear from the patient's mind and have confidence in himself. Suggestion is especially valuable during the analgesic stage.

The difficulties often experienced with athletic and plethoric patients are due to their greater demand for oxygen; one or two doses of H. M. C. No. 1 (Abbott) makes these patients behave normally under gas-oxygen.

Use rapid induction in all cases except with anemic patients. Slow induction should be employed with them, because a marked anoxemia may affect their nervous system. Begin the anesthesia with about 30 percent oxygen and either increase or decrease the percentage of oxygen as subsequent symptoms may indicate.

The pupil of the eye reacts to light during induction as well as during the entire surgical stage. The light reflex is abolished when the

danger stage is reached and at the point where the pupil shows the secondary dilation from overdose. Therefore, a dilated pupil that does not react to light is a positive sign of profound anesthesia, and an active pupillary light reflex is a positive assurance that the toxic degree of narcosis is not present.

During the analgesic stage, the patient's conscious mind is inhibited, while the subconscious becomes more receptive to suggestions, as in hypnosis. It is therefore important that the anesthetist or dentist keep his own psychic state calm and confident and make definite suggestions, in words, to the patient, that he is doing well and that all will be right.

Heart Disease as a Surgical Risk

Heart disease, organic or functional, is always a matter for serious consideration when the question of a surgical operation arises.

In J. A. M. A., July 12, 1930, Drs. S. Butler, N. Feeney and S. A. Levine review the history of all patients with heart disease operated upon at the Peter Bent Brigham Hospital, Boston, and arrive at the following conclusions regarding them:

1.—Four hundred and fourteen (414) patients suffering from heart disease, who underwent 494 operations, were studied in order to determine the risk of operation and the rôle played by the heart on the outcome. Deaths were divided into two types, "unexpected" and "inevitable." There were twenty-eight unexpected deaths; i.e., a mortality of 6.3 percent.

2.—One hundred and forty-seven (147) operations were performed on 120 patients with valvular heart disease, with three unexpected deaths; i.e., a mortality of 2.1 percent.

3.—One hundred and sixty-seven (167) operations were performed on 138 patients having chronic myocarditis, with eight unexpected deaths; i.e., a mortality of 4.9 percent. These patients were mostly older persons and tolerated operation well.

4.—There were 108 operations performed on eighty-seven patients with auricular fibrillation, with three unexpected deaths; i.e., a mortality of 3 percent. Contrary to the general opinion, the risk of operating on such patients is not great.

5.—Forty-one (41) operations were performed on thirty-five patients having angina pectoris, with three unexpected deaths, i.e., a mortality of 7.7 percent. There seems to be a slight risk of coronary thrombosis following in the wake of surgical intervention in patients with angina pectoris.

6.—There were twenty operations performed on as many patients with coronary thrombosis. There were eight unexpected deaths; i.e., a mortality of 44.5 percent.

7.—Thirteen operations were performed on eleven patients with syphilitic aortitis. There was one unexpected death.

8.—There were six patients with paroxysmal tachycardia, three of whom had attacks during operation and three after operation. All recovered.

9.—There were fifty operations performed on as many patients with congestive heart failure. There were seven unexpected deaths; i.e., a mortality of 17.1 percent.

10.—There were 433 operations performed on 359 patients having heart disease without nephritis. Twenty unexpected deaths occurred; i.e., a mortality of 4.9 percent. There were sixty-one operations performed on fifty-five patients having heart disease with nephritis, with eight unexpected deaths; i.e., a mortality of 14.8 percent. This well illustrates the increase in risk which results from the presence of nephritis.

11.—The survival of the patient with heart disease is not the only consideration. Conditions for which there are nonoperative palliative methods of treatment should not be subjected to surgery when the heart disease is so grave that the ultimate life expectancy, at best, is short.

12.—In most types of heart disease the surgical risk is not appreciably greater than in the normal person. In some in which the risk would be great, it may be materially diminished with proper preoperative diagnosis and therapy.

Co-Administration of Carbon Dioxide With Nitrous Oxide in Anesthesia

Certain experiments carried out by Dr. W. E. Brown and his associates, of the University of Toronto, described in *Anesth. & Analg.*, May-June, 1930, show that substitution of 5 percent carbon dioxide for 5 percent nitrous oxide usually increases the amount of oxygen carried by the blood stream. This is of the very greatest importance in nitrous oxide anesthesia, where the danger lies in an inadequate supply of oxygen reaching the cardiac muscle in prolonged anesthesia. The oxygen supply can be improved without decreasing the depth of anesthesia.

This procedure should be of the greatest possible value in those cases in which morphine and hyoscine premedication has led to a decrease in the depth of respiration, and further should contribute to the avoidance of local pulmonary atelectasis.

Right-Sided Pain in So-called Chronic Appendicitis

In *Canad. M. A. J.*, July, 1930, Dr. W. A. Bigelow, of Brandon, Canada, expresses the opinion that the right sided abdominal pain, in so-called chronic appendicitis, is due to the presence of adhesive bands involving this or neighbouring portions of the intestine and the structures in the vicinity.

During the past 16 years, 1,027 cases were treated by a very thorough surgical removal of all such adhesions, as well as the appendix when present.

After removal of the bands, hot compresses of 1:10,000 bichloride of mercury solution are applied to the freshly denuded peritoneal surfaces. The operative area of the bowel is thoroughly dried and a thin coating of sterile vaseline applied.

Postoperative treatment is important. Eserine sulphate, 1/100 grain (.65 Mgm.), is given three times a day during the first week. The patient is kept away from the right-side position in the bed. After the second day, a full

enema is given daily. Dry heat is constantly applied to the right side for a week. The patient is kept in bed for 15 to 17 days.

Of all the patients followed after a number of years, 93 percent reported no recurrence of the pain.

Thyroid Heart—A Transitory Condition

Severe myocardial decompensation is a frequent accompaniment of hyperthyroidism, but the exact cause of the heart failure and the method of pathologic injury to the heart are unknown.

In *Bull. Johns Hopkins Hosp.*, July, 1930, Dr. H. M. Thomas reports 2 cases of exophthalmic goiter with severe myocardial insufficiency. In the first case, as in most others reported in the literature, although death resulted from heart failure, there was no evidence, pathologically, of significant myocardial damage.

The second case, one of an extreme form of myocardial insufficiency in thyroid heart disease, with auricular fibrillation of more than a year's duration following thyroidectomy, made a complete clinical recovery.

The author is of the opinion that this second case demonstrates clearly the fact that even the most severe intoxication from hyperthyroidism need not produce permanent functional cardiac damage. The two cases reported, coupled with many others reported from other clinics, place the burden of proof on those who claim that permanent myocardial damage results from hyperthyroidism.

Orange Juice Milk in Infant Feeding

In the preparation of orange juice milk, 1 ounce of strained orange juice is used to each 16 ounces of milk.

In *Illinois M. J.*, Mar., 1930, Dr. K. G. Woodward, in comparing 200 infants fed orange juice milk with an equal number fed other forms of milk mixtures, states that it was found that the infants on the orange juice mixture required fewer adjustments of the formula, had an average greater gain in weight per month and were less troubled with intestinal upsets. At certain periods of the year, when the oranges are more sour, it may be necessary to diminish the proportion of orange juice, to avoid excessive flatulence and occasional loose stools.

Hints in the Treatment of Syphilis

In *J. Chemother.*, July, 1930, Dr. H. Goodman gives some hints derived from his experience in the treatment of syphilis:

Primary syphilis. All patients with chancre, or the remains of chancre or the induration following chancre receive sodium iodide intravenously, 30 grains (1.95 Gm.) dissolved in 20 cc. of freshly-distilled, boiled water, alternately with intravenous injections of arsphenamine. The chancre is destroyed by the actual canterly if the location permits.

Secondary syphilis. Intravenous injections of sodium thiosulphate are given, alternately with

arsphenamine injections. The sodium salt may be given by mouth (0.5 Gm. in an enteric-coated tablet, three times a day). This medication should be continued throughout the secondary phase of syphilis.

Active tertiary syphilis. Iodine is used as a preliminary to arsphenamine treatment. Sodium iodide is given intravenously and potassium iodide by mouth. Large doses are used. Arsphenamine is never given if there is any question that the open lesions which the patient presents may be a carcinoma or sarcoma, even if he has an undoubted history of syphilis and a positive Wassermann reaction.

The Eye in Kidney Disease

In *Prescriber*, July, 1930, Dr. P. A. Harry states that a study of the various types of kidney disease will confirm the importance of the eye signs.

Acute nephritis may commence with edema or puffiness around the eyes.

In chronic interstitial nephritis, conjunctival hemorrhages are noticed in the early stages, even before the renal function tests are decidedly positive.

In chronic nephritis, the retinal arteries are markedly tortuous, "silver-wired" and blocked in places with an exudation of serum in the vicinity, and there is occasionally a central scotoma in both eyes. Retinal arteriosclerosis is present in all cases of chronic nephritis. As the tendency to renal insufficiency becomes greater, lipid deposits become more numerous in the cells of the retina, in many cases radiating in a regular manner around the macula.

It was formerly taught that albuminuric retinitis was caused by the albumin in the urine; but it is now known that the retinitis is the result of an inflammation or a toxemia, and is the same as that affecting the kidney. The early manifestations occasionally consist of spasm of the retinal arteries, causing temporary amblyopia. Retinal hemorrhages are frequent.

Personality Factors in Alcoholism

The impulse to drink must be regarded as a reaction on the part of an individual organism to an environmental situation.

In *Arch. Neurol. & Psychiat.*, July, 1930, Dr. H. H. Hart of New York, gives the findings in a personality study of 30 alcoholic patients observed in a sanitarium.

From a review of the facts collected and the picture of the various personalities studied, there can be derived a composite pattern or type which is common to most alcoholic patients. In the first place, there is a constitutional instability in the stock, with parental discord, alcoholism, want of discipline and lack of sensible direction in the environment of childhood. In some cases, pampering of an only child produces a want of a mature sense of responsibility, and a resultant exaggerated sense of importance in the community. Thus, ill-adjusted to life, frequently with a marked cyclothymic make-up and exposed on all sides to the opportunity for alcoholic oblivion, the impulse comes to escape the unpleasant relations and situations which

the personality has precipitated, and the man finds in alcohol, both an exhilaration and a nemesis.

Frequently, religious devotion can provide a simple retreat from the world; in one of these patients, both these means of escape were utilized, without any apparent sense of inconsistency. The drink, in some cases, seems a definite substitute for sexual satisfaction, because of the diminished libido which results. The need for alcoholic comfort, in the advent of no reformative influence in the individual life, becomes more frequent. The dipsomaniac patient develops chronic alcoholism, and then there appear the deterioration and changes, both psychic and physical, that are effected by chronic poisoning.

Because of its emotional significance, alcoholism cannot be regarded as a disease, such as typhoid or pneumonia, which runs its course and from which the patient is glad to recover. He retains his alcoholic solace, since he can find no substitute that will secure release from the feeling of inadequacy. It is an emotional and moral problem, not an unduly physical one. This has to be considered before one can expect any permanent cure. Only that which can build up the self-respect, the habit organization and the feeling of adequacy, rendering it, not only possible, but attractive to attain a level of mature responsibility, can be expected to emancipate the alcoholic patient.

Sclerosing Injections in Rhinology

In *Presse méd.*, Paris, Aug. 2, 1930, Dr. L. R. Leroux mentions some cases in which Sicard's method of treating varicosities has been tried with success in circulatory disturbances of the nasal fossae.

Quinine and urea was selected as the sclerosing substance.

The idea in mind is to reduce inflamed and hypertrophied turbinates by injection, but the author believes that this procedure should be confined to the inferior turbinate, which is the only one with spongy tissue. Injection of hypertrophied middle turbinates would be useless and dangerous, owing to the vascular relations with the meningeal circulation.

Kidney Functional Tests

The values of the various functional kidney tests are studied by Dr. B. A. Thomas, of Philadelphia, in *J. Urol.* Aug. 1930.

Undoubtedly, the most reliable test of kidney function is a quantitative metabolic study, such as the *Mosenthal test day meal*, by which, normally, the versatility of the renal function can be demonstrated: (1) variability in the specific gravity of the urine of ten or more points; (2) balance of the intake and output of salt, nitrogen and fluid; and (3) (a) specific gravity of the night urine of 1.016 or higher; (b) content of nitrogen of over 1 percent; (c) an amount of 400 cc. or less.

This test is invaluable for the determination of incipient nephritis, but is a measure only of the lessening of the versatility of kidney function in relative insufficiency and is of no value

in absolute renal insufficiency. It subjects the kidney to definite stress—the essence of any true physiologic test—but, as is the case with other tests, it is subject to interference by certain extra-renal factors.

It has been the author's routine practice for years, in studying the operative qualifications of patients with prostatic or other low urinary tract obstructions, where the total kidney function becomes a matter of concern, to apply two first-class, if not the best, tests of elimination and retention. For this purpose, the index of elimination of phenol-sulphone-phthalein and the blood urea nitrogen have served well and faithfully, than which there are none better or more reliable. In addition to these, in all toxic patients, a test of the CO₂ combining power of the blood plasma is a routine procedure and has sufficed to differentiate acidosis from alkalosis, saving many lives by indicating, early, the appropriate line of treatment.

Staphylococcus Toxin in the Treatment of Furunculosis

The *Staphylococcus aureus* produces a skin-necrotizing toxin, which may be demonstrated by growing suitable strains of the coccus in broth for about five days and passing the culture through a Berkfeld filter.

In *J.A.M.A.*, Aug. 2, 1930, Dr. E. C. Weise, of Bridgeport, Conn., reports upon 24 cases of unselected and various types of recurring furunculosis, treated by injections of the skin-necrotizing toxin mentioned, diluted with physiologic solution of sodium chloride. The initial dose was 0.5 cc. of a 1:20 dilution, gradually increased during about ten injections to 1 cc. of a 1:2 dilution.

Of the 24 cases treated, 19 showed an arrest of the furuncles.

Favorable response to this treatment was also noted in other types of staphyloiderma.

Avertin Narcosis

Avertin (tribromomethylalcohol), as a preanesthetic agent, has now received the degree of independent clinical trial that some conclusions can be reached regarding its value.

In *Anesth. & Analg.*, May-June, 1930, Dr. G. Edwards, of London, Eng., from a year's experience, states that Avertin can be used to provide a deep narcosis, which is easily convertible into anesthesia by the giving of very small quantities of the ordinary anesthetics. It is reasonably safe in doses up to 0.1 gram per kilo of body weight. It eliminates nearly all the mental stress which accompanies the usual administration of an anesthetic. It has no effect upon the respiratory tract. It is well taken by persons with excessive thyroid secretion. It is fairly easy to give.

On the other hand, it is not controllable and cannot safely be used as the sole anesthetic agent. It has to be prepared with care. It should not be used where there is any disease of the kidneys, liver, or colon, or where there is thyroid deficiency. It is not, as was at first hoped, an anesthetic that anybody can give at any time. It requires an experienced anes-

thetist to control the superimposed anesthesia. The necessity of giving the injection half an hour beforehand adds to the anesthetist's duties and makes its use difficult in hospital practice where cases follow each other with rapidity.

In certain cases and types of patients, Avertin is a great help. As a routine anesthetic agent, it is hardly practicable.

Arsphenamine Resistant Syphilis

It has been said that early syphilis reacts to treatment with arsphenamine less favorably now than in the years before the World War.

In *Arch. Dermat. & Syphil.*, Jan., 1930, Drs. J. E. Moore and H. M. Robinson report that composite Wassermann curves of 1,116 patients with early syphilis, studied from 1914 to 1927 in the syphilis clinic of the Johns Hopkins Hospital, show that there is no significant difference in serologic results in recent, as compared with earlier years. Relapses of a secondary type were no more frequent in recent years than formerly. Patients with lessened resistance to syphilitic infection are no more frequent now than in earlier years and there is no evidence that in the United States arsphenamine is less efficacious than formerly in the treatment of syphilis.

Effect of Non-Living Testicular Grafts

From experiments performed on rats and guinea pigs, Dr. C. R. Moore, of Chicago, states, in *J.A.M.A.*, June 14, 1930, that the non-viable testicular graft, such as testicular tissue derived from another species or testicular tissue from a similar animal which, failing to resist the forces antagonistic to its incorporation in the host, undergoes autolysis, does not liberate hormone in amounts that can be detected by any means at present known. Furthermore, Dr. Moore finds that the testis hormone is not stored within the body, but is excreted by the kidneys.

There is no known acceptable evidence, according to Dr. Moore, that non-viable testis grafts exert any immediate or remote beneficial effect on the host organism.

Sciatic Pain

As pointed out by Dr. C. W. Buckley, in *Practitioner*, Lond., June, 1930, there are many causes giving rise to sciatic pain, besides that to which it is commonly attributed, namely, neuritis, or more correctly, perineuritis, of the sciatic nerve. These include fibrositis, myositis and bursitis of the gluteal region; synovitis and arthritis of the hip joint; strain, subluxation or arthritis of the sacro-iliac joints; abnormalities of the sacral and lumbar vertebrae and their articulations; and sacralization of the fifth lumbar vertebra. To these various conditions must be added diseases of the pelvic organs.

Successful treatment depends upon the accurate determination of the cause, which calls for a thorough physical examination. If strain is the cause, correction of the fault is of the first importance.

In ordinary cases, heat, applied to lumbar and sacral areas, should first be tried. Diathermy is, perhaps, the only method of bringing the area actually affected under the direct influence of heat; ultraviolet irradiation is quite without effect, unless it be in the most superficial forms of fibrositis.

Injection of isotonic saline solution is a method which has proved valuable. The injection is made at the sciatic notch or the gluteal fold, 20 to 100 cc. of the solution being used, after injecting a few drops of procaine solution. It is effective in perineuritis and often gives relief where the site of trouble is in the region of the sacro-iliac joint. Injections of oxygen and even of air have given relief in some cases, probably by breaking down adhesions and reducing congestion.

A search for and radical treatment of septic foci is indicated in all cases, and also the treatment of metabolic disorders.

Dyspepsia in Childhood

Hepatic dyspepsia, a variety of chronic indigestion in which a functional disorder of the liver appears to be the cause of the symptoms, is common in childhood.

In *Practitioner*, Lond., July, 1930, Dr. R. Hutchinson remarks that two features are characteristic of this condition and clinch the diagnosis: One is that the child often has a "bad breath" and the other that the stools are at times very pale in color.

Hepatic dyspepsia seems to be due to two factors: An inborn inefficiency of the liver, which may be inherited and acts as a predisposing cause; the other, the exciting cause, is an over-use of "liver foods," such as milk, cream and dairy products, with accessory articles of diet such as chocolate and oranges. The attempt to fatten such predisposed children by giving them quantities of milk and cream is the main cause of their dyspepsia. The liver seems to become glutted with imperfectly metabolized material and the episodes of vomiting or fever clear it out and enable a fresh start to be made.

The slogan "drink more milk" has this much to answer for; and the kindred cry of "eat more fruit," which has partly led to the present craze for giving large quantities of orange juice, is also responsible for much hepatic dyspepsia, though it is difficult to explain how oranges produce this effect.

The treatment consists in cutting down liver foods and giving hepatic stimulants.

Pregnancy and Tuberculosis

From the information gathered by Dr. H. L. Barnes and Lena R. P. Barnes, in a large series of cases of pregnancy in tuberculous women and reported in *Am. J. Obst. & Gynec.*, April, 1930, these authors conclude that a woman with active tuberculosis should avoid pregnancy, in order that she may be spared the extra work and worry of a baby, and that the baby may be spared the risk of infection.

In the series of cases collected, about 81 percent of the tuberculous women who became

pregnant and who were not subjected to therapeutic abortion bore normal children. The data obtained suggests that pregnancy itself has a harmful influence in only a small percentage of cases and that abortion is rarely beneficial to tuberculous women.

A policy which would sacrifice all these children on the apparently slight and still unproved chance of saving the mothers is not easy to justify.

"Jamaica Ginger" Paralysis

A number of cases of so-called "Jamaica ginger" paralysis have been reported, observed in males drinking the ginger as a beverage. In *Southern M. J.*, May, 1930, Dr. Seale Harris reports such a series, and his investigations showed that this paralysis was chiefly limited to the muscles of the legs, although, in some, the thigh muscles were also involved.

The chief differential finding in the neurologic examination of these patients is the inconstancy of the knee, biceps and triceps jerks. In the usual peripheral neuritis of the motor type, these reflexes are entirely absent.

The rational treatment of all forms of neuritis is that which should be followed in this condition. The prevention of contractures should be one of the first precautionary measures to be undertaken as, once they have formed, they are very difficult to overcome. The period of convalescence will probably vary from 3 months to 1 year or more, depending upon the amount of nerve damage that must be overcome by regeneration.

Emotional Hypertension

Based on a study of 8 personal cases and a review of literature, Dr. E. J. Stieglitz, of Chicago, in *Am. J. Med. Sc.*, June, 1930, states that exaggeration of the vasomotor response to emotional stimulation causes an acute arterial hypertension in certain patients, with associated subjective symptoms. The rise in arterial tension is so marked as to constitute a definite menace to physical health.

The symptoms are quite variable, being referable to the cardiac apparatus, the head, cutaneous sensation and the respiratory functions, and are all physiologically dependent upon vasomotor phenomena. Emotional instability is characteristic of this group. Sexual disturbances are likewise frequent and notable.

Such emotional hypertension may form the basis of later permanent arterial hypertonia. It, therefore may well be considered as a "potential hypertension."

This clinical syndrome must be sought for by blood-pressure observations, in all instances where patients complain of physical distress attendant upon psychic strain. The emotional instability so characteristic of these vasomotor phenomena may be the result of the circulatory instability, or vice versa.

Thus far, the most satisfactory method of therapy has been the administration of bismuth subnitrate in 10-grain (0.625 Gm.) doses, thrice daily, as a vascular sedative and depressant,

combined with reassurance. It is important that these patients be thoroughly convinced that they are not suffering from heart disease, as many of them believe.

The Schilling Blood Count in Children's Disease

The Schilling blood count (a simplification of the Arneith count) varies from the usual differential count in the division of the polymorphonuclear neutrophils into groups according to the degree of their maturity. These cells are counted separately and tabulated to form a "hemogram." Repeated at frequent intervals and set up in vertical columns, the successive blood counts combine to form a comprehensive picture, more valuable than the ordinary count in the interpretation of an illness.

In *Am. J. Dis. Child.*, July, 1930, Dr. J. L. Rogatz, of New York, from an experience of 26 cases in which the Schilling blood count was used, states that it is of greater value than the ordinary differential smear in supplementing and interpreting the clinical picture of acute pathologic conditions in infancy and childhood.

When repeated at frequent intervals during an infection, the Schilling hemogram reflects the progress of the patient and it has been repeatedly shown to anticipate the appearance of a complication, improvement or other change in the body by 24 hours or more. It is, therefore, of definite value in immediate prognosis.

This type of count should, in the author's opinion, if further reports bear out its apparent validity, replace the ordinary differential count in routine hospital work and private practice.

Chronic Constipation

In *J. Mich. St. M. Soc.*, July, 1930, Dr. Walter A. Bastedo, of New York, points out that even in normal individuals the rate for the passage of intestinal contents varies within wide limits and may take many days.

If the bowel is normal, bowel movements depend upon: (1) a sufficient bulk of food residues; (2) the ability to keep the residues from becoming unduly hard; (3) the power of the residues to produce normal reactions in the bowel wall, either by their bulk, by their roughage content or by chemical drug substances contained in the foods or developed from them by digestive or bacterial action.

In the treatment of constipation it should be the ultimate endeavor to bring the patient back to these normals. But when the constipation is associated with diseased digestive organs, and especially if these show hypertone or hyperirritability, bulk producers should be substituted for the roughage part of the food residues; soft-

ness should be insured by water and oil; and, instead of depending for stimulation on complex foods which contain or yield indefinite amounts of uncertain chemical stimulants, definite doses of drugs whose action is known should be prescribed.

Irritative states of stomach or bowels contraindicate the use of roughage, therefore, in the presence of gastric hyperacidity mucous colitis and other irritative conditions, the need at the outset is bland food and appropriate drugs, among which are: the softening and bulk-producing agents, phenolphthalein, the saline laxatives (in small doses with much water) and the tonic laxatives.

Stramonium in Post-Encephalic Syndrome

From their experience in a considerable number of cases, Drs. A. L. Jacobson and F. Eppien, of Seattle, state, in *Ann. Intern. Med.*, Aug., 1930, that stramonium is a valuable drug for the palliation of the Parkinsonian syndrome (excitomotor phenomena, with an admixture of ocular parietic and phenomena attributable to the vegetative nervous system) and associated symptoms.

Very large doses are necessary—20 to 60 measured minims, four times daily. Toxic manifestations are rare and fleeting. Fresh preparations should always be used.

First Aid Treatment of Burns

Dr. F. Christoph, of Chicago, in *Internat. J. Med. & Surg.*, July, 1930, gives the following rules for the first-aid treatment of extensive burns:

- 1.—Treat pain with morphine.
- 2.—Treat primary shock with morphine, external heat and fluids.
- 3.—Remove clothing carefully, using anesthesia if necessary.
- 4.—Do not apply any ointments to the burned surface. If they be present, remove them, using anesthesia if necessary.
- 5.—Remove all clothing and place patient in a heated tent.
- 6.—Spray all burned surfaces, every 15 minutes, with a 5-percent solution of freshly-prepared, aqueous solution of tannic acid.
- 7.—Under sterile precautions, trim away the overlying epithelium of all blebs and blisters and spray the underlying area with tannic acid solution.
- 8.—Administer at least 1,000 cc. of fluid for each 25 pounds of body weight in 24 hours for the first 1 to 3 days. Any fluids may be given by mouth. Isotonic salt solution is given by rectum and by hypodermoclysis. Five-percent dextrose in isotonic salt solution is given by infusion.

NEW BOOKS

Bell: Pathology

A TEXT-BOOK OF PATHOLOGY. Edited by E. T. Bell, M.D., Professor of Pathology in the University of Minnesota, Minneapolis, Minn. Illustrated with 316 Engravings and Two Colored Plates. Philadelphia. Lea & Febiger. 1930. Price \$8.00.

This volume, the work of six contributors, presents the essential facts of pathology which must be known to every medical student.

The authors have made a special effort to bring the structural changes in disease into close relation with the problems of clinical teaching, but functional changes are only briefly discussed in the text.

There are 28 chapters dealing with the diseases incident to systems and individual organs. Special chapters deal with inflammation, tumors and other general diseases. Gynecologic pathology, diseases of the heart, diseases of the digestive system and neuropathology are well covered and illustrated with numerous original clinical photographs, histologic sections and schematic drawings, obviating the necessity for descriptive text, which the limits of the book, dealing succinctly with an extensive subject, would not allow.

The manual appears to fulfil the aim of the authors to give the medical student all the necessary facts requisite for an authoritative, broad knowledge of general and special pathology. There are bibliographic references to easily accessible literature at the end of the chapters for those who wish to pursue matters further, and the general index is very full.

A highly satisfactory work for the active clinician.

Nicholson: Laboratory Medicine

LABORATORY MEDICINE; A Guide for Students and Practitioners. By Daniel Nicholson, M.D., Member of The Royal College of Physicians, London; Assistant Professor of Pathology, University of Manitoba; Assistant in Pathology, Winnipeg General Hospital. Illustrated with 108 Engravings and a Colored Plate. Philadelphia: Lea & Febiger. 1930. Price \$6.00.

Although purely laboratory methods can never take the place of clinical observation, yet the progress of scientific medicine has made it almost essential that, in a great many diseases, where the symptomatology is by no means pathognomonic, the practitioner is forced to verify his observations by recourse to certain tests; not to do so in such cases is merely to reduce diagnosis to guessing.

The aim of Dr. Nicholson's book is to provide, in detail, information on the indications,

method and interpretation of such useful laboratory tests as the general medical practitioner should be able to perform. Further, it outlines the principles and interpretations of the more elaborate, highly technical procedures which may be performed for a practitioner in a large laboratory. Ten years' experience in teaching students clinical laboratory work has enabled the author to select those tests which are most useful in diagnosis, which can be quickly done with a minimum of apparatus, and have proved themselves in the rigid conditions of daily practice.

The fourteen chapters which make up the volume cover the blood, urine, sputum, feces, cerebrospinal fluid, gastric and duodenal contents, exudates, and skin tests. The final chapter is devoted to a description of laboratory apparatus.

The text is well and clearly arranged, with suitable illustrations to clarify it when necessary. An excellent idea is the putting of important statements in bold face type, which at once impresses the reader and rivets the attention.

This is an excellent and needed presentation of an important subject. Both the general practitioner and the laboratory technical diagnostician will find all they want in it, and the copious index will help them to locate it at once. It is a highly satisfactory book for the active clinician who does not need the comprehensive and detailed information required by the specializing pathologist.

Pack and Davis: Burns

BURNS: Types, Pathology and Management. By George T. Pack, B.S., M.D., Fellow of The Memorial Hospital, New York City; Formerly Professor of Pathology and Lecturer in Minor Surgery, The School of Medicine, University of Alabama; etc., and A. Hobson Davis, B.S., M.D., Instructor in Pathology, University of Alabama. 60 Illustrations. Philadelphia: J. B. Lippincott and Company. 1930. Price \$6.00.

The extension of chemical and electrical processes in modern industry is no doubt responsible for a great increase in the incidence of serious burns. In 1921 the number of deaths from burns of all kinds in the Registration Area of the United States was 11,586; in 1926 the number had increased to 14,532.

That there is a great divergence in the methods of dealing with severe burns goes without saying; it is also fairly safe to say that very many general and industrial physicians are not so well acquainted as they might be with the comparative values of these methods, especially with the newer methods.

In this book the authors not alone write from their own practical experience, but have drawn freely from the literature of the subject. There are three main parts. Part I deals with the general facts regarding burns; Part II covers the management of thermal burns in 12 chapters; Part III deals with regional burns and burns by specific agents. The latter part includes chapters on burns by chemical caustics and those due to war gases.

Special prominence is given by the authors to the tannic acid treatment of burns, which they think is destined to become universally employed; also to the post-convalescent period which involves orthopedic and plastic surgery. Older treatments of burns having good points are discussed in the light of modern advances.

The book is one that may be consulted with advantage by any physician or surgeon, but it is of particular value to industrial physicians.

all matters connected with malaria control. The chapters are supplemented with bibliographic references.

The printing, paper and binding are very satisfactory.

Medical Education, Medical Licensure and Hospitals

PROCEEDINGS OF THE ANNUAL CONGRESS ON MEDICAL EDUCATION, MEDICAL LICENSURE AND HOSPITALS. Chicago, February 17, 18 and 19, 1930. American Medical Association.

The proceedings of the Annual Congress on Medical Education, Medical Licensure and Hospitals, held at Chicago, in February, 1930, contain all the papers and discussions there presented before: (1) the Council on Medical Education and Hospitals of the American Medical Association; (2) the Federation of State Medical Boards of the United States; and (3) the American Conference on Hospital Service.

These papers contain the most recent expressions of representative professional opinion on matters coming within the scope of the bodies referred to. In the section on hospital service, the views of hospital superintendents and of laymen are also presented.

The book is a synopsis of information on some of the most burning medical questions of the day—matters in which every practitioner should be deeply interested. Those desiring copies should write to the Am. Med. Assn., 535 N. Dearborn St., Chicago, for particulars.

Young: Anatomy

HANDBOOK OF ANATOMY; Being a Complete Compend of Anatomy. By James K. Young, M.D., F. A. C. S., Late Professor of Orthopaedics, Graduate School of Medicine, University of Pennsylvania; etc. Revised by George W. Miller, M.D., F.A.C.S., Associate in Anatomy, Jefferson Medical College; etc. Seventh Revised Edition, with 154 Engravings, Some in Colors. Philadelphia: F. A. Davis Company. 1930. Price \$2.75.

The first edition of Dr. Young's handbook of anatomy appeared in 1889 and this is the seventh revised issue. It is a handy compend or outline of anatomy, arranged according to systems and regions. Although essentially a book for the medical student, it will be a handy reference volume for the practitioner who does not care for a more elaborate tome, as it is somewhat more complete than the usual compend. The classification follows the Basle Nomenclature (B N A).

Boyd: Malariology

AN INTRODUCTION TO MALARIOLOGY. By Mark F. Boyd. Cambridge: Harvard University Press. 1930. Price \$5.00.

The author of this work on malaria, which is to a large extent a compilation, is associated with the staff of the International Health Division of the Rockefeller Foundation. It is essentially a guide for public health officials concerned with the struggle against malaria, and more particularly for those actually engaged in field work or students who are preparing for such work.

Of the 6 chapters which make up the book, the two on the natural history of anophelines and anopheline surveys are excellently written and illustrated and contain a large amount of interesting information not usually given in medical treatises. Incidentally, the author shows that the species of anophelines responsible for malaria differ very greatly in various regions and that observations drawn from the study of these insects and their work in one region cannot be generalized.

Physicians interested in epidemiology will find this book instructive and very informative on

Parsons: Haitian Medicine

HISTORY OF HAITIAN MEDICINE. By Robert P. Parsons, Lieut.-Comm., M. C., U. S. N. Foreword by Edward B. Stitt, Rear Admiral, M. C., U. S. N. With 21 Illustrations and a Folding Map of Haiti. New York: Paul B. Hoeber, Inc. 1930. Price \$2.25.

Some readers of books find their pleasure in following the unerring and marvelous cleverness of the fictional sleuth; others delight in biography and philosophy. To the medical man, however, a story such as the one simply told by Dr. Parsons in this book should, not only be deeply interesting, but engrossing.

In the fantastic republic of Haiti, to a great extent a comic-opera state, there was still the deeply human problem of the frightful ravages of disease—preventable, epidemic disease—with practically little or no attempt to apply common medical knowledge. The island reeked with the stench of yaws, and this was but one of the scourges to which this unfortunate population was a prey.

Dr. Parsons unfolds the tale of the American occupation of Haiti, under treaty; of the struggle to deal with governmental and popular prejudices against the establishment of scientific sanitary measures; of the gradual winning of the confidence of the natives; of the establishment of hospitals and clinics; of public health sanitation; and of the final triumphs in the stamping out of plagues which had more than decimated the population for centuries. Haiti has served as a laboratory of applied preventive medicine

and state medicine. In a lesser way, it is again the story of the Canal Zone under Gorgas. The results from the indefatigable work of a few American humanitarian doctors, within a few years, can be considered as nothing short of marvelous.

The simple narrative of Dr. Parsons is interesting, invigorating and inspiring. Its perusal will hold the wrapt attention of any medical man.

As a piece of bookwork, the volume leaves nothing to be desired.

Whitman: Orthopedic Surgery

A TREATISE ON ORTHOPAEDIC SURGERY. By Royal Whitman, M.D., M.R.C.S., F.A.C.S., Consultant to The Hospital for the Ruptured and Crippled, to the St. Giles and St. John's Guild Hospitals, to the New York and Darrach Homes for Crippled Children, etc. Ninth Edition, Thoroughly Revised. Illustrated with 981 Engravings. Philadelphia. Lea & Febiger. 1930. Price \$10.00.

Dr. Whitman's textbook on orthopedic surgery has, since its first edition in 1901, been recognized as a standard treatise on this subject. It represents the newest widened conception of orthopedics, including not only the manipulative measures (which Dr. Whitman always advocates when applicable), but also surgery, physical therapy and any other therapeutic procedures which may find a place in the prevention or treatment of deformities. Especially, Dr. Whitman's book represents a continuity of his own wide personal experience as consultant to the Hospital for the Ruptured and Crippled and other similar institutions, and this present ninth edition will, like its predecessors, take its place as a textual authority and as a complete exposition of the present-day practice of orthopedics, valuable alike to the student, practitioner and specialist.

The material of the book is drawn from every department of medicine. The various groups, often unrelated in etiology and pathology, are classified on the common basis of mechanical disability and from a functional standpoint adapted to clinical teaching.

Axtell: Reducing Diets

GROW THIN ON GOOD FOOD. By Luella E. Axtell, M.D., Illus. New York and London: Funk & Wagnalls Company. 1930. Price \$2.00.

The present-day fad, especially among women, for fashionable slimmness has resulted in the adoption of special dieting which, in many cases, has proved distinctly harmful.

Dr. Axtell outlines a plan of adequate and varied dietaries in which, however, fat-forming foods are reduced to a minimum. By this means, combined with plenty of exercise, particularly out of doors, and the drinking of ample supplies of water for elimination, it is claimed that a pleasant and healthful method of reducing excessive weight is reached. She claims that, in her own person and in her own practice, this method has been successful.

It is easy enough for people to avoid excessive adiposity or reduce it when present, if they will

to do so, by avoiding excess in food consumption and taking constant exercise. The question is, will they do it and keep it up as a habit?

The book has a number of attractive and enticing menus with recipes and, no doubt, if one faithfully followed the advice given, excess weight could be thrown off. It may be recommended to obese patients by physicians.

Stevenson: Philosophy for Children

BIG THOUGHTS FOR LITTLE THINKERS. By Ruth C. P. Stevenson. Boston: Richard G. Badger. 1929. Price \$1.50.

The preadolescents, and even the preschoolers, sometimes put their elders, who have never done much philosophizing, in a tight place by asking questions of cosmic import. Casual or flip-pant answers to such questions give the child a poor idea of the ability and wisdom of a parent or teacher.

The writer of this little book has evidently been a student of one of the schools of occult philosophy, and is prone to use the terminology of her particular cult, but most of these schools have something real to teach, and Mrs. Stevenson has been decidedly successful in setting forth some of the great, fundamental truths in language which will be intelligible to most intelligent children. Especially fortunate is her use of the neuter pronoun, It, when referring to God, thus escaping the danger of developing an anthropomorphic conception of Deity.

God; Birth, Life and Death; Cosmic Forces; Wisdom; and Purity are here discussed, in such a way that the physician can safely recommend the book to parents who seek his advice as to what they shall tell their children when the little ones begin to ask embarrassing questions.

Wood: Memory Training

MEMORY TRAINING. A Practical Course. Half an Hour a Day for Six Months. By Ernest Wood, Principal, Sind National College, Hyderabad, India; Author of Concentration, Character Building, Destiny, etc. Fifteenth Edition, Revised and Enlarged. Wheaton, Ill.: The Theosophical Press. 1925. Price \$1.25.

If one judges by remarks made in general conversation, a defective memory is one of the most common human possessions. People deplore such a condition, but seem to do little about it, perhaps because they do not know how.

Ernest Wood says that anyone who will spend half an hour a day, for six months, can develop a reliable memory, and he outlines the exercises in which this time is to be spent. As the declaration has been made that one cannot train part of the mind without training it all, the importance of such efforts is obvious.

The two general systems for memory training—by the imagination and by reasoning—are synthesized in this book, some of the exercises being of one sort and others of the other. The basic principles are well set forth, and simple diagrams are helpful.

The scheme for remembering a series of numbers and one or two others, seem a bit far-fetched and difficult and appear of small practical value, except as mental gymnastics, but

these latter are well worth while, for most of us.

In general, however, there seems little doubt that anyone who will really follow up these exercises regularly can achieve a surprising improvement in the memory; and that cannot be obtained by any method which does not include hard work. This volume gives one directions which will make one's work in this line count.

Medical Record Visiting List

THE MEDICAL RECORD VISITING LIST OF Physicians' Diary for 1931. Revised. New York, William Wood and Company. Price \$2.00.

This annually issued physician's pocket book for the year 1931 is arranged for sufficient notes of visits to the extent of 60 patients per week. In addition it is a vade mecum of essential information for emergencies, with dose tables, etc. Every visiting practitioner needs such a notebook.

Williams: Minor Surgery

MINOR SURGERY AND BANDAGING; For the Use of House Surgeons, Dressers, and Junior Practitioners. 20th edition. By Gwynne Williams, M.S., F.R.C.S., Surgeon, University College Hospital. With 262 Illustrations. Philadelphia: F. A. Davis Company. 1930. Price \$3.50.

A book that has run into twenty editions needs no commendation. The original edition of this work on minor surgery and bandaging, for the use of house surgeons and dressers, appeared in 1861 and the various editions since then have incorporated all advances in the art. Such changes as have been necessary since the last edition in 1927 have been included in this edition. The matters dealt with are such as every hospital intern should know, and the book will be useful in first-aid stations, out-patient clinics and similar places.

Hartridge and Haynes: Histology

HISTOLOGY; For Medical Students. By H. Hartridge, M.A., M.D., Sc.D., M.R.C.P., F.R.S., Professor of Physiology, University of London, at St. Bartholomew's Medical College and F. Haynes, M.A., Demonstrator of Histology, University of London, at St. Bartholomew's Medical College. London and New York: Humphrey Milford, Oxford University Press. 1930.

This is an excellent manual of normal histology, suitable for students who do not require a very detailed knowledge of the subject. Lengthy descriptions are avoided by the profusion of excellent plates, each giving about 10 colored illustrations of the microscopic appearance of the tissues making up the various organs of the body. The teaching is, therefore, to a very large extent, conveyed by visual sensory impressions, only a concise textual description of each section being necessary.

Following a few general introductory chapters

dealing with the method of obtaining and staining sections, the arrangement follows systems—muscle, nerves, glandular, etc.—the organs included in the system being arranged seriatim.

As a supplement to lectures, the book is suitable for medical students, more especially those attending English medical schools, and would serve well to refresh the memory of the practitioner who desires to look up microscopic anatomy in preparing for an examination or for any other purpose.

Findlay: Chemotherapy

RECENT ADVANCES IN CHEMOTHERAPY. By G. M. Findlay, O. B. E., M.D., D.Sc., Wellcome Bureau of Scientific Research, London. With a Foreword by C. M. Wenyon, C.M.G., C.B.E., M.B., B.S., B.Sc., F.R.S., Director-in-Chief of the Wellcome Bureau of Scientific Research. London. With 4 Plates and 11 Text Figures. Philadelphia: P. Blakiston's Son & Co., Inc., 1012 Walnut Street. 1930. Price \$3.50.

The author has supplied a book which fills a gap in scientific medico-chemical knowledge. Books have appeared relating to the chemistry of chemotherapeutic drugs, but very little is available from the medical and biochemical viewpoint, excepting the excellent "Principles and Practice of Chemotherapy" by Kolmer.

Defining chemotherapy as the treatment of parasitic diseases by chemicals, with the object of destroying the specific parasites of the disease, Findlay discusses, in turn, Helminthic Infections, Amebiasis, Malaria, Leishmaniasis, Trypanosomiasis, Piroplasmosis, Syphilis, Yaws, Relapsing Fever, Mycotic Diseases, Leprosy, Tuberculosis, Granuloma Inguinale, Acute Bacterial Infections, Virus Diseases and Cancer.

The available drugs in the different classes are described, their indications and merits noted, and data supplied regarding their modes of action and applicability. It is unfortunate that the treatment is slightly provincial, being concerned almost entirely with European chemotherapeutic developments, and largely ignoring the American contributions. Nevertheless, the book will be found very useful, and should occupy an important place on the scientific shelf of the physician who wishes to be fully informed on any of the subjects treated.

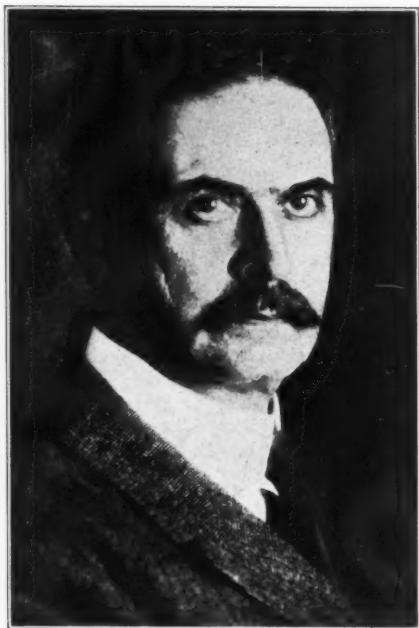
E. H. V.

Borradaile: Zoology

ELEMENTARY ZOOLOGY; For Medical Students. By L. A. Borradaile Sc. D., Fellow and Tutor of Selwyn College, Cambridge, and Lecturer in Zoology in the University. 2nd Edition. London and New York: Humphrey Milford, Oxford University Press. 1930.

This is an abridgement of parts of the author's "Manual of Zoology," containing such elementary information regarding the subject in general, and in particular, as medical students are expected to be acquainted with.

MEDICAL NEWS



(c) Wide World Photos

Nobel Prize to Dr. Landsteiner

The first of the Nobel Prize awards was announced October 30, by the Stockholm Faculty of Medicine, and goes to Dr. Karl Landsteiner, of the Rockefeller Institute for Medical Research, for his work in classifying the various types of human blood. This is the second time that the Nobel prize in medicine has gone to an American worker, the former recipient being Dr. Alexis Carrel, in 1912. The money grant amounts to about \$48,000.00.

Dr. Landsteiner was born and educated in Austria and was professor of pathology in the University of Vienna from 1910 to 1920. He came to the Rockefeller Institute in 1922. Among his other contributions to medical science have been the transmission of anterior poliomyelitis to monkeys,

thereby opening that disease to laboratory investigation, and studies on paroxysmal hemoglobinuria and the properties of the blood serum.

Fellowships for Training in Extramural Psychiatry

Minimum Requirements for Applicants

These fellowships are designed to provide special training for physicians who have had previous hospital training in psychiatry but who wish to prepare themselves for extramural work in the fields of child guidance, delinquency, education, dependency, and industry.

Fellowships are open to physicians who are:

- 1.—Under thirty-five years of age
- 2.—Graduates of Class A medical schools, and
- 3.—Who have had at least one year of training in a hospital for mental disease maintaining satisfactory standards of clinical work and instruction. A longer period of hospital training is desirable.

Applicants able to meet these requirements will not be required to take competitive written or oral examinations. Selections will be made on the basis of length and type of previous training in formal psychiatry; on general fitness for the work contemplated; and (in most cases) on the results of a personal interview.

General Details of Fellowships

- 1.—These fellowships cover a period of training approximately one year in length.
- 2.—During this training period trainees usually are assigned for three to four months' periods at such places as the Boston Psychopathic Hospital; Judge Baker Foundation, Boston; Institute for Juvenile Research, Chicago, and other places of a similar nature, as well as to various child guidance clinics located in Cleveland, Philadelphia and other cities. Assignments to these training centers are not definite, however, and assignment to any given place

will depend upon the availability of instruction at such place, as well as the special needs of the individual trainee. Assignments are not made for more than three months in advance, and adherence for the year's training period to a fixed program in advance is impossible.

3.—These fellowships carry stipends at the rate of \$2,000 to \$2,500 for the twelve months' period.

4.—Applications need not be filed within stated periods but will be received at any time. In the case of successful applicants, arrangements will be made to begin work whenever mutually convenient to the applicant and to the director of the training center to which the applicant is first assigned.

Applications or inquiries for further information should be sent to Dr. Frankwood E. Williams, Medical Director, National Committee for Mental Hygiene, 370 Seventh Avenue, New York, N. Y.

Cause of "Jake" Paralysis

The U. S. Public Health Service announces (as reported in *Science News Letter*, Oct. 4, 1930) that the cause of paralysis following the drinking of certain brands of Jamaica ginger, has been found to be triorthocresyl phosphate, a substance related to carbolic acid and widely used in varnishes and shellacs.

United States Civil Service Examinations

The United States Civil Service Commission announces the following-named open competitive examinations:

Social Worker (Psychiatric)
Junior Social Worker

Applications will be rated as received by the U. S. Civil Service Commission at Washington, D. C., until December 30, 1930.

These examinations are to fill vacancies in Veterans' Bureau hospitals.

Full information may be obtained from

the United States Civil Service Commission, Washington, D. C., or from the Secretary of the United States Civil Service Board of Examiners at the post office or customhouse in any city.



School in a Tuberculosis Sanatorium

Many children are to be found in practically every tuberculosis sanatorium in the country, and it would be a crime to deprive these youngsters of their schooling, in addition to the handicap of their disease.

So it has become the custom, in most such institutions, to have competent teachers to carry on the instruction. This is done so well that most of the pupils, when they return to the schools outside, are ahead of those who have pursued the regular course.

Note that all except one or two of the oldest children are naked, except for a breech-clout. This is the modern practice in institutions like the Glen Lake Sanatorium, Minnesota, where this picture was taken.

Unfit Ether Poured on Snow

How to dispose of 1,300 cases of ether, condemned under the food and drugs act as unfit for use, gave the authorities in a Middle West city cause for thought last month. The fire hazard precluded putting so much inflammable material down the sewers or pouring it out on the city dump. Accordingly, the cans of illegal ether were emptied over the snow in a waste place, where the volatile liquid soon evaporated, with no injury to life or property.—*Official Record*, U. S. Dept. of Agriculture.

Send For This Literature

To assist doctors in obtaining current literature published by manufacturers of equipment, pharmaceuticals, physician's supplies, foods, etc., CLINICAL MEDICINE and SURGERY, North Chicago, Ill., will gladly forward request for such catalogues, booklets, reprints, etc., as are listed from month to month in this department. Some of the material now available in printed form is shown below, each piece being given a key number. For convenience in ordering, our readers may use these numbers and simply send requests to this magazine. Our aim is

to recommend only current literature which meets the standards of this paper as to reliability and adaptability for physicians' use.

Both the literature listed below and the service are free. In addition to this, we will gladly furnish such other information as you may desire regarding additional equipment or medical supplies. Make use of this department.

When requesting literature, please specify whether you are a doctor of medicine, dentistry, medical student, a registered pharmacist, or a nurse.

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| I- 3 Storm Binder and Abdominal Supporter. 4-page folder by Dr. Katharine L. Storm. | I-310 Conclusions from published research of the value of Ceanothyn as a hemostatic. Flint, Eaton & Co. |
| I- 17 An Index of Treatment. Burnham Soluble Iodine Co. | I-318 Blood Clinical and Laboratory Diagnosis. A book of 160 pages by Henry Irving Berger, M.D., Battle & Company. |
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| I- 95 Everything for the Sick. Lindsay Laboratories. | I-374 Table for Determining Date of Delivery. The Viburno Company, Inc. |
| I-116 Hemo-Glycogen, The New Product Hemoglobin Compound and Liver Extract. Chappel Bros., Inc. | I-383 Syrup Histosan Controls the Cough in Acute and Chronic Bronchitis, Pneumonia and other Pulmonary Diseases. Ernst Bischoff Co., Inc. |
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| I-156 Siomine (Methanamine Tetraiodide). Pitman-Moore Company. | I-392 Arthritis. Its Classification and Treatment. Battle & Co. |
| I-196 "Facts Worth Knowing." Intravenous Products Co. of America, Inc. | I-401 When the Cross Roads are Reached in Hemorrhoids (Piles). Schering & Glatz, Inc. |
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| I-258 Prophylaxis. August E. Drucker Co. | I-410 Acidosis. A Warning Sign in Pregnancy—Alka-Zane. Wm. R. Warner & Co., Inc. |
| I-269 Special Course No. VI Traumatic Surgery. Illinois Post Graduate Medical School, Inc. | |
| I-271 The Intestinal Flora. The Battle Creek Food Company. | |
| I-292 Acidosis and Infection—Alka Zane, William R. Warner & Co., Inc. | |

- I-412 The New Colloidal Antacid. The Wander Co.
- I-414 Laboratory Test in Pictures—Silvagon. Ernst Bischoff Company, Inc.
- I-415 Allonal, "Roche," Its Indications in Various Fields of Medicine and Surgery. Hoffman-La Roche, Inc.
- I-418 Diphtheria Can Be Kept From Your Family by Protective Immunization. The National Drug Co.
- I-424 When Chemists Turned from Gold to Drugs, Pantopon, Roche. Hoffman-La Roche, Inc.
- I-425 Cerebrospinal Fever (Epidemic, Cerebrospinal Meningitis, Meningococcic Meningitis, Spotted Fever), Symptoms and Specific Treatment with Anti-Meningococcic Serum. The National Drug Co.
- I-443 AbilenA. Its Location Discovery, Origin, Chemistry, Medicinal or Clinical Value and Uses. The AbilenA Co.
- I-446 Dependable Products, Pan-Secretin Co., Adreno-Spermin Co., Lydin and Pancreas Co. The Harrower Laboratory, Inc.
- I-448 May 1936, Supplement to Net Price List containing new Pharmaceutical Specialties, Solu-Caps, Ointments, Syrups and Tablets. Sutliff & Case Co., Inc.
- I-449 General Catalog of Medicinal Chemicals. Bilhuber-Knoll Corp.
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- I-463 "What The Keeley Treatment Has Done For Me." The Keeley Institute.
- I-465 Diagnosis of Cardio-Vascular Diseases, by Henry Irving Berger, M. D. Sultan Drug Company.
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- I-484 Tell Your Patients this Scientific Story—Detoxol Paste. The Wm. S. Merrell Company.
- I-485 New Oscillatory Currents for Low Tension Technique. McIntosh Electrical Corporation.
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- I-487 Solution Normet, Surgical and Medical. High Chemical Co.



Quick relief in GASTRIC PAIN, too!

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Vomiting in Pregnancy
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After Anesthesia

● The pleasantly effective antacid, BiSoDoL, not only controls hyperacidity quickly but in so doing it allays pain and irritation to the sensitive mucous membrane of the stomach.

BiSoDoL offers a balanced formula in which the effect of the sodium and magnesium bases is enhanced by the mechanical protective effect of the bismuth content on mucous membranes.

Where systemic alkalization is indicated, as in the treatment of cyclic vomiting, the morning sickness of pregnancy, the common cold and respiratory affections in general, etc., BiSoDoL offers distinct advantages over the usual forms of alkali treatment.

We would like you to try BiSoDoL for yourself. Let us send you literature and clinical sample of this ethically presented prescription product.

The BiSoDoL Company
Dept. C. M. 12, 130 Bristol St., New Haven, Conn.



BiSoDoL



Two Endocrine Formulas

frequently indicated in general practice

Adreno-Spermin Co.

(Harrower)

combines whole adrenal, thyroid, and spermin. Supports depleted adrenal function, thus reducing dependent neuromuscular asthenia. Increases sympathetic tone, and stimulates oxidation. A catalytic endocrine tonic. For hypotension, neurasthenia, slow convalescence, and run-down conditions. Dose: One sanitablet q.i.d. for several months.

Thyro-Ovarian Co.

(Harrower)

a combination of thyroid, ovarian substance with corpus luteum, and whole pituitary, highly effective in the treatment of dysovarism, dysmenorrhea, amenorrhea.

Dose: One sanitablet t.i.d., a.c., for ten days; double dose for ten days before menses; omit for ten days at onset of menses; repeat.

The Harrower Laboratory, Inc.

Glendale, California

REVELATION TOOTH POWDER

FOR
TEETH AND
GUMS



NEVER IN
PASTE FORM

CLEANLINESS without injury to tooth structure or tissues is the most essential necessity in a dentifrice.

INJURIOUS SUBSTANCES — as GLYCERINE, GRIT, CHLORATE OF POTASH, or any CORROSIVE COMPOUND should not be incorporated in the manufacture of a dentifrice.

GLYCERINE is a depletent, it saps the moisture from the tissues, which naturally will recede exposing the periodontal membrane causing sensitivity and bleeding. This moisture in the cellular tissue is essential to the healthy condition of the membrane.

REVELATION TOOTH POWDER is never in paste form and contains none of the above mentioned drugs.

Upon receipt of your professional card we will be pleased to mail you a can.

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